

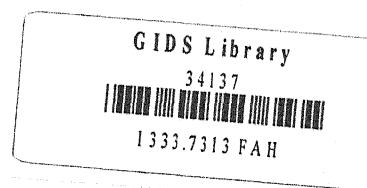
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# MODEL LAND USE PLAN OF LUCKNOW DISTRICT

(Revised)

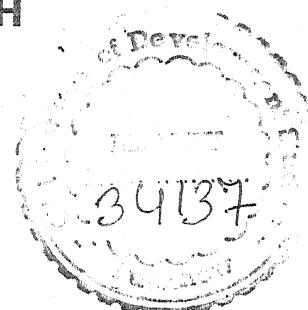
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STATE LAND USE BOARD  
DEPARTMENT OF PLANNING  
GOVERNMENT OF UTTAR PRADESH



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## PREFACE

The availability of land for various uses is limited. Therefore, utilization and conservation of land resources are important for their sustainable use. Formulation of Model Land Use Plan is an important step for promoting a desirable land use. With this view, State Land Use Board, Department of Planning, Government of Uttar Pradesh, entrusted the Giri Institute of Development Studies, Lucknow to prepare Model Land Use Plan for six districts of Uttar Pradesh, namely, Lucknow, Kanpur, Bareilly, Moradabad, Meerut and Agra. The present report is the Model Land Use Plan of Lucknow district.

We are highly obliged to Shri S.N. Jha, IAS, the then Principal Secretary, Department of Planning, Government of Uttar Pradesh for sponsoring the task to our Institute. Mr. Anis Ansari, IAS, who has been the Principal Secretary, Department of Planning, after Shri Jha, provided us very useful guidance. We are extremely grateful to Shri Amal Kumar Verma, IAS, the present Principal Secretary, Department of Planning for his valuable guidance on the subject. We feel grateful to Shri Kunwar Fateh Bahadur, IAS, and Shri Navtej Singh, IAS, Secretary, Department of Planning for their guidance and encouragement. We are also extending our thanks to Shri A.N. Mishra, IAS, Special Secretary, Planning for his continuous support in pursuance of the study.

We feel highly obliged to Ms. Mridula Singh, Additional Director, Land Use Board for providing the opportunity to work on this important subject. Her deep and thorough understanding of the subject helped us to analyze the important issues relating to planning for land resources. The other officials of the Land Use Board, particularly, Dr. (Ms) Anandeshwari Awasthi, SRO, Shri Murali Lal, RO, Shri Arvind Kumar Verma, RO and Shri K.B. Lal provided all the necessary support during the study and hence we are highly thankful to all of them.

A Model Land Use Plan can not be prepared without the active support of concerned departments. Shri Vasudev Verma, Additional Director, Department of Agriculture, Shri A.K. Dwivedi, Chief Planner, Department of Forest, Shri Satyavir Singh Dalal, Senior Planner, Town and Country Planning Department and many officials of the Board of Revenue, Forest Agriculture Departments, Sodic Land Reclamation Project, Directorate of Economics and Statistics have been quite helpful in the preparation of this Model Land Use Plan.

We feel very much obliged to District Magistrate and Chief Development Officer, Lucknow district and other Government Officials of different Departments in the District for their active participation in the final presentation of the Plan.

The research team of the Institute consisting of Ajai Kumar Singh, Mohd. Kaleem, Ravi Nigam, Vinay Kumar Bisht, Zamir Ahmad, Shubhra Tandon, Sanjai Sharma and Ms. Sweta Yadav remained involved in data collection, processing and computerization. All of them did their job efficiently and deserve our appreciation. Last but not the least, Shri Manoharan K. deserves our thanks for word processing the manuscript efficiently.

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July 11, 2005

## CONTENTS

	<u>Page No.</u>
Preface	i-ii
List of Tables	v
<b>CHAPTER I      GEO-PHYSICAL CHARACTERISTICS</b>	<b>1-24</b>
I.1      Location and Area	1-2
I.1.1    Area	2
I.2      Physiography	2-4
I.3      Rivers and Water Resources (Drainage)	4-10
I.3.1    Gomati River	4-6
I.3.2    Tributaries of the Gomati : Right Bank Tributaries – Akraddi Nala	6-9
I.3.3    Lakes and Tanks	9-10
I.4      Geology	10-12
I.5      Climate	12-18
I.5.1    Observatories	12
I.5.2    Seasons	12
I.5.3    Temperature and Humidity	13-18
I.6      Flora and Fauna	18-24
<b>CHAPTER II     POPULATION AND LAND RESOURCES</b>	<b>25-35</b>
II.1     Population	25-26
II.2     Population in Age Groups	26-27
II.3     Working Population	27-28
II.4     Classification of Workers	28-29
II.5     Literacy	29-30
II.6     Population Growth	30-31
II.7     Per Capita Availability of Land	31-32
II.8     Land Holdings: Number	32-33
II.9     Land Holdings: Area	34
II.10    Conclusion	35
<b>CHAPTER III    TRENDS AND PROJECTIONS OF LAND USE PATTERN</b>	<b>36-43</b>
III.1    Trends in Land Use Pattern	36-38
III.2    Changes in Area Under Different Land Uses	38-39
III.4    Growth in Area of Different Land Uses	40-41
III.5    Projection of Land Use Pattern of the District	42-43

<b>CHAPTER IV</b>	<b>IDENTIFICATION OF PLANNING AREAS</b>	<b>44-47</b>
IV.1	Land Under Forest	44
IV.2	Barren Land	45
IV.3	Land Under Non-Agricultural Uses	45
IV.4	Culturable Waste	45-46
IV.5	Permanent Pasture Land	46
IV.6	Area Under Miscellaneous Trees	46
IV.7	Fallow Land	46-47
IV.8	Net Area Sown	47
<b>CHAPTER V</b>	<b>LAND USE PLANNING IN LUCKNOW DISTRICT</b>	<b>48-63</b>
V.1	Plan for Forest Development	48-49
V.2	Strategy of Increasing Tree Cover	49-53
V.2.1	Methodology	49-53
V.3	Plan of Barren Land Use	54-55
V.4	Plan of Land Area Under Non-Agricultural Uses	55-57
V.5	Plan for Culturable Waste	57-58
V.6	Plan for the Pasture Land	59
V.7	Plan for the Miscellaneous Trees	59-60
V.8	Plan for Current Fallow	60-61
V.9	Plan for Other Fallow	61-62
V.10	Plan for Net Area Sown	63
<b>CHAPTER VI</b>	<b>MODEL LAND USE PLAN OF LUCKNOW DISTRICT</b>	<b>64-67</b>
VI.1	Framework of the Plan	64-67
<b>Annexure</b>		<b>68-69</b>

## LIST OF TABLES

<u>Table No.</u>	<u>Title</u>	<u>Page No.</u>
Table II.1	Population Characteristics of Lucknow District and Uttar Pradesh: 1991 Census	26
Table II.2	Age-wise Classification of Population in Lucknow District: 1991 Census	27
Table II.3	Working Population in Lucknow District and Uttar Pradesh: 1991 Census	28
Table II.4	Classification of Workers of Lucknow District and Uttar Pradesh: 1991 Census	29
Table II.5	Literacy Rate in Lucknow District and Uttar Pradesh: 1991 Census	30
Table II.6	Projected Population Growth in Lucknow District and Uttar Pradesh: 1990-91 to 2009-2010	31
Table II.7	Per Capita Availability of Reported Area and Net Cultivated Area in Lucknow District and Uttar Pradesh	32
Table II.8	Number of Holdings in Lucknow District and Uttar Pradesh : 1990-1991 to 2009-2010	33
Table II.9	Area of Different Holdings in Lucknow District and Uttar Pradesh : 1990-1991 to 2009-2010	34
Table III.1	Trends in Land Use Pattern of Lucknow District	37
Table III.2	Period-wise Shift in Area Under Different Land Use Categories in Lucknow District	39
Table III.3	Growth Rate in Area Under Different Land Use Categories in Lucknow District	41
Table III.4	Projected Area Under Different Land Use Classes	43
Table V.1	Plan to Increase Tree Cover on Net Sown Area in Lucknow District	50
Table V.2	Area of Different Land Uses Which is to be used for Tree Cover in Lucknow District Upto 2009-2010	52
Table V.3	Estimated Financial Requirement for the Proposed Area in Tree Cover of Lucknow District from 2001-2002 to 2009-2010	53
Table V.4	Proposed Plan of Barren Land Use in Lucknow District	55
Table V.5	Proposed Plan of Increase in the Area of Non-Agricultural Uses in Lucknow District	57
Table V.6	Proposed Plan for the Use of Culturable Waste in Lucknow District	58
Table V.7	Proposed Plan for the Use of Current Fallow in Lucknow District	61
Table V.8	Proposed Plan for the Use of Other Fallow in Lucknow District	62
Table V.9	Proposed Plan for the Net Area Sown in Lucknow District	63
Table VI.1	Framework of Model Land Use Plan	65
Table VI.2	Model Land Use Plan of Lucknow District: 2000-2001 to 2009-2010	67

# **CHAPTER – I**

## **GEO-PHYSICAL CHARACTERISTICS**

The district of Lucknow is named after the city of Lucknow, which is situated almost in the centre of the district. The origin of the name 'Lucknow' is not definitely traceable, and whatever traditions are available, are of extremely doubtful historical authenticity. Lucknow formed a part of the ancient kingdom of Kosal, and there is a tradition that the town was named in honour of Rama's brother, Lakshmana as Lakhnupuri which was corrupted into Lukhnau and later to its present designation of Lucknow. The story that the town is named after an *ahir* or milk-seller named Lakhna, who as a result of the spiritual blessings of a Muslim saint, had become rich and founded the town, is apocryphal and is hardly worthy of any credit. Even the *Ain-i-Akbari*, while dealing with the *Sarkar* of Lucknow as a part of the *Suba of Avadh*, does not throw any light on the origin of the name of Lucknow.

### **I.1 LOCATION AND AREA**

The district lies between the parallels of  $26^{\circ}30'$  and  $27^{\circ}10'$  north latitude and  $80^{\circ}30'$  and  $81^{\circ}13'$  of east longitude. The district is an irregular quadrilateral with the city and cantonment of Lucknow forming nearly the centre. It is bounded in the north by the district of Sitapur, on the east by that of Bara Banki, on the south by that of Rae Bareli and on the north-west and the south-west by the districts of Hardoi and Unnao respectively. Except in a part in the south and south-west, the boundaries of the district can hardly be called natural, and appear to have been fixed arbitrarily for administrative convenience; the river Sai on the south and south-west forming the natural boundary for a short distance only.

### I.i.1 Area

With the exception of the district of Rampur, Lucknow is the smallest district in point of area in Uttar Pradesh. The geographical area of the district, according to the Sankhykiya Patrika-1999 was 2528 square kilometres in 1991.

The total population of the district according to the 1991 Census was 2762.80 thousand, of which the rural population accounted for 1031.58 thousand and the urban for 1731.22 thousand. The small area of the district as a whole gives a heavy density of 1093 persons per square kilometre, the unusual density being accounted for by the presence of growing the city of Lucknow. The number of villages in the district is 834, which again is a larger concentration of villages in proportion to the area of the district.

### I.2 PHYSIOGRAPHY

The district lies almost in the centre of the area between the Ganga on one side and the Ghagra on the other. It is almost a level plain with few distinguishing features. Broadly speaking, it can be divided into three natural or physical divisions :-

- (a) The Gomati basin
- (b) The Sai and its catchment area
- (c) The central upland on the higher "watershed, running from the north-west to the south-east and separating the two. To the north and east of the Gomati, the land is an undulating plain and the number of rivulets, which traverse it, finally join the Gomati on its left bank. The Gomati basin comprises parts of the Pargana of Malihabad on its right, those of Mahona on its left, the central part of the Lucknow tahsil and the north-eastern portion of tahsil Mohanlalganj. The river itself, ordinarily, runs in a deep and tortuous bed with high banks, cut up at places by ravines or the rivulets that join it on either of its

banks. The soils on the alluvial plain along the high banks are in strong contrast to those in the sandy and sometimes water-logged narrow flood-plain of the river, called *tarai*. This *tarai*, if free from the floods of the river, is very fertile and yields good crops. The light sandy soil in pargana Malihabad and Mahona is also remarkable for excellent crops of melons.

The area to the north and north-east of pargana Mahona also contains a watershed between the Gomati and the Ghagra and resembles generally the central upland in tahsil Lucknow, though the predominant soil is slightly clayey in texture. On account of its indifferent drainage, it is dotted with numerous *jhilis*. The Reth takes its rise in this area and after flowing in an easterly direction through district Bara Banki eventually joins the Gomati on its left bank. The Sai and a part of its catchment area lie to the south and south-east of the district, and are remarkable for the large areas of *usar* land that lie along or at some distance from its banks.

The central upland marks the watershed and forms the most fertile part of the district. The course of the Sarda Canal marks the highest level of the watershed. The general slope of the district is from the north and north-west to the south and south-east. With the exception of the immediate neighbourhood of the rivers which are entirely cut up by ravines, the slope of the land is very gradual and almost unnoticeable. At its extreme north near Mahona the level is 450' above the sea-level, at Alambagh about the centre of the district near Lucknow it is 394', and at Nagram on the south-east the level is 372', showing a slope of not more than 43'.

The district is completely devoid of any relief of appreciable size, and the monotony of the level plain is broken only in the vicinity of the rivers where the land is cut up by deep ravines. The *naals* originating to the north-west and south-east of this watershed join

the river Sai, while the Gomati forms the main channel of drainage for the area lying to the east of Lucknow. The rivulets arising in pargana Mahona, flow eastward and ultimately join the Gomati. The fall in the level of the district being so gradual, it is not surprising that in Malihabad one should meet *with jhils*, and that in Mohanlalganj as well there should be a number of shallow *jhils*, which, however, dry up during the hot weather. *These jhils* also mark a water-logged area which the flatness of the country does not allow to be drained effectively. A triangle between Mohanlalganj and Gosainganj with Nagram as the apex is an area of inland drainage having a chain of *jhils*.

### I.3 RIVERS AND WATER RESOURCES (DRAINAGE)

As mentioned above, the district is crossed by a number of rivers and *nals*, among which the Gomati is the principal one. As is obvious from the configuration of the district, they follow a south-easterly course. The main tributaries of the Gomati are Akraddi, Jhilingi, Behta and Loni on the right, and Kukrail, Reth and some minor *nals* on the left. The other river of importance is the Sai, which flows across the south-western corner and forms the boundary for a distance in the southern part. The tributaries of this river are Nagwa and Bankh and join the main river from the north. In addition to these, a large number of small rivulets, originating in the central watershed area join one or the other of the streams described above. During the rainy season all those small rivers flow with a sufficient volume of water and during the hot season shrink to a narrow channel.

#### I.3.1 Gomati River

The river Gomati takes its rise in district Pilibhit. After a sinuous course in south-easterly direction, it enters Kheri, and then cutting off the two parganas of Muhamdi and

Pasgawan from the rest of the district, flows almost due south to form the boundary between the districts of Hardoi and Sitapur until its entrance into Lucknow district. Then it flows south in a meandering course and forms the boundary between the parganas of Mahona and Malihabad. As it moves towards the south, loop of the meandering river get more pronounced. One such loop may be seen in the west of the village Kathwara in the south-western part of pargana Mahona. It enters the pargana of Lucknow between Ranimau and Raitha, and crosses it diagonally after forming the boundary of pargana Malihabad. Here it flows in a deep bed between ill-defined banks, and is seldom violent. During heavy rains, sometimes, the river overflows its banks, but soon subsides. Near the entrance into the pargana the banks of river are steep and dissected by a number of ravines, but at Duggaur and Kankarabad, the banks begin to recede and the valley to widen out. In the pargana of Lucknow the river-valley is narrow, but it again widens out after leaving it. At the point where the river forms the boundary between Lucknow and Mohanlalganj, the river bed shrinks again. After leaving the pargana Mohanlalganj at Sikandarpur Khurd, it continues to form the northern and the eastern boundary of Mohanlalganj. The river finally leaves the district at Salempur, where it is joined by the Loni and enters Bara Banki.

At places, there are narrow belts of *tarai* land between the two banks formed from silt deposited by floods. These *tarai lands* on account of their water-content have good crops of *kharif* in years of drought, all *tarai* land, however, is apt to be inundated in years of heavy rainfall and is consequently somewhat of a precarious nature. The high bank on the other hand, has a lower water-table and generally suffers from deficiency of water. The sub-soil is almost of sandy porous nature and in many places, especially in the Mohanlalganj pargana, is greatly broken by ravines.

The river Gomati is subject to periodical floods. It drains a large portion of the districts of Pilibhit - the district of its birth, Kheri, Hardoi and Sitapur before it enters Lucknow. The river banks in the city are reinforced by high bunds on both sides and thus protect the city from floods; but the flood waters cause some damage to the low-lying villages to the north of the city. As a rule, the river flows in a deep bed, which makes it difficult for any attempt to be made to secure water from the river for irrigation. There is no evidence that the river has ever been extensively used for navigation. Country-crafts, however, do use the river for the transport of straw, fuel-wood, etc. The river is crossed by four bridges: one on the road to Sitapur, another on the road to Daliganj, the third near University called Hanuman Setu and the last on the road connecting the city with Faizabad Road through Nishatganj. The North-Eastern Railway crosses the river between the city and the Daliganj stations while the Northern Railway crosses it between the Charbagh and the Malhaur stations.

### I.3.2 Tributaries of the Gomati : Right Bank Tributaries – Akraddi Nala

The Akraddi rises in the Gundwa pargana of Hardoi district, near the boundary of Lucknow district. It is the northern-most tributary of the Gomati and flows for the most part in Malihabad. It is joined by some minor *nalas* in its lower parts and finally falls into the river Gomati near Manjhowa village.

**Jhilingi** - The next tributary which flows in the south of the Akraddi is Jhilingi. It originates in the pargana of Malihabad near Village Masira Ratan. Running in a direction almost parallel to the Akraddi nala, it joins the Gomati river near Gopramau.

**Behta** – The most important tributary of the Gomati is the Behta, a small perennial stream which has its origin in the Hardoi district and flows to the south of the tributaries mentioned above. It enters this district near the railway lines on the north-western boundary. At first, after traversing only a short distance in the district it goes out and enters the territory of Unnao, but soon returns and joins the district-boundary near Jindaur. Then flowing south-eastward in a most tortuous course through the southern and south-western part of Malihabad pargana, it reaches the boundary of Kakori and then, after forming for a short distance the boundary of pargana Kakori, it joins the Gomati on the right bank near the village of Kankarabad.

**Loni** - This is the fourth and the last tributary of the Gomati, joining it on the right. It is a small stream which has its origin in the Mohanlalganj pargana. The north central portion of pargana Mohanlalganj is drained by this river and its tributary *nalas*, which join it both from the north and the south. After covering a distance of about nine miles the river reaches its lower course, and finally joins the Gomati at Salempur close to the north-eastern boundary of the district.

**Tributaries on the Left Bank** - Most of the tributaries joining the Gomati on the left bank are non-perennial. The only perennial streams are the Kukrail and the Reth.

**Kukrail** - The river originates near village Asthi of pargana Mahona. For the most part, after its entrance into pargana Lucknow the river runs in a narrow bed enclosed by steep banks. As compared with the Loni, its tributary *nalas* are few in number. When it approaches the Gomati, its banks recede to a narrow strip and we get the moist *tarai* lands of Bastauli and Shaikhpur-Kasaila on either side of the Faizabad Road. It joins the Gomati just below the city of Lucknow.

**Reth** - Actually the river Reth flows through the adjoining district of Bara Banki, but a small portion lies in Lucknow district also in the north-eastern part of pargana Mahona. It joins the river Gomati on the border of the two districts near the village Guskar in the north-eastern part of Mohanlalganj pargana.

**Sai River** - The river Sai enters the district on the south-west from the pargana of Mahona in the Unnao district. It forms the boundary between the parganas of Mohan and Bijnor (Lucknow) and then it enters the latter near Darabnagar. After separating out five villages from the rest of the pargana, it again forms the boundary separating Bijnor from Gorinda Parsandon and then enters Unnao at Bani. It reappears in pargana Nigohan and forms the boundary between it and pargana Maurawan of Unnao district for several kilometres. It finally leaves the district at Birsinghpur.

Though it is important river, but it serves only the southern and south-western parts of the district. It is a perennial stream, flowing in a narrow well-defined channel. Its bed is shallower than that of the Gomati, and the land on its banks is less dissected by ravines. Like the 'Gomati' it also has sandy tracts on its left side.

The *tara* of the Sai is very small and extends over only three villages, Bhandnamau in Bijnor, and Miranpur and, Mungtiya in Nigohan. All of these are occasionally visited by floods of the river.

**Tributaries of the Sai** - As mentioned previously there are only two important tributaries of the river Sai, viz. the Nagwa and the Bankh.

**Nagwa Nala** - The stream originates a few kilometres to the north of Mohan in the Unnao district. It soon reaches the boundary and separates the parganas of Mohan and Auras from Kakori. When it reaches the boundary of pargana Bijnor, it turns abruptly to the east

and' forms a big loop till it reaches near Amawan. From there it follows in a south-easterly course upto the west of Banthara, where it again takes a 90° bend and finally falls into the Sai near village Bani on the Kanpur Road.

The stream has a small tributary named Samdia which originates locally and falls near Aridpur Siktiya, a village in Bijnor.

**Bankh** - The chain of *jhilis* to the south of the jail and the Charbagh railway station that runs through the villages of Mohammadinagar, Saleh and Aurangabad and to the east of Bijnor, gives rise to the Bankh. It enters the pargana Mohanlalganj from the north-west and after traversing only two villages enters Nigohan from the north as a perennial stream. It turns towards the south-east through the central part of this' pargana and continues upto Nigohan town after which it again bends to the south-west and finally joins the Sai near Birsinghpur on the Rae Bareli border. The soil in its neighbourhood is mostly loam of a fair quality, but it becomes sandy *bhur* as we go nearer the Sai.

### **I.3.3 Lakes and Tanks**

There are a number of *jhilis* in tahsil Malihabad, which are generally too shallow to be depended upon for irrigation in years of deficient rainfall. In pargana Mohanlalganj too, there are a number of *jhilis* lying between Mohanlalganj, Gosainganj and Nagram. The more important of these is the Karaula *jhil* which spreads through many villages and is estimated to cover an area of 800 acres. The Hardoiya *jhil* has an area of about 200 acres while the Sissendi *jhil* is a smaller one with an area of 150 acres. In pargana Bijnor, the only lake of any importance is the Khartola *jhil* with an area of about 50 acres. Near Amausi there is another *jhil* called the Kusela *jhil* covering an area of about 500 acres. All these *jhilis* dry up in hot weather, shrinking into small ponds containing about 3 feet of

water. In the rains, the level of water in *the jhils* rises to as much as 15 feet or so. As the water recedes after the rains, the land near the banks is cultivated by the people and sown with paddy. Even gram is grown in *rabi* in a large part of the *jhil* land, vacated by the water in the beginning of cold weather. Some of the Jhils near to the city have been dried up completely and residential colonies have been built up. There are no natural springs in the district and the small rivers or *naas* that take their rise from the low-lying lands or swamps do not serve any purpose other than that of drainage-channels during the monsoon.

#### I.4 GEOLOGY

The district forms part of the great Indo-Gangetic Plain formed by the deposits laid down by the rivers. The geology of the district does not reveal anything interesting or striking except ordinary Gangetic alluvium. The nature and the depth of this alluvium, as discovered by the various borings, did not show anything except coarse sand and sandy silt with occasional beds of clay and *kankar*. Apart from *kankar*, brick-earth and marl beds occur in various parts of the district.

Kankar-The *kankar* (nodular lime-stone) is found in beds of varying thickness almost everywhere in the district. They can be dug at any place from two to five feet below the surface of the ground. The *kankar* is mainly used for two purposes, viz. road building and manufacture of lime used in the construction of houses. In its crude form it serves as a good road-building material. Almost all the roads of the district were constructed with this material, until it was replaced by the present method of using ballast and tar-macadam.

Brick-earth - Brick-earth is found in many parts of the district. The best variety of brick-earth is found near the tenth kilometre on the road from Lucknow to Rae Bareli and near the seventh kilometre on the Kanpur Road. However, brick kilns have been established along all the approach roads of the city.

Marl - Marl is the third mineral of the district. Marl deposits have been reported from Lucknow, Mohanlalganj and Malihabad tahsils. Marl is a deposit of calcareous loam or clay, which is generally found *in jhils* and along the river banks. In the Mohanlalganj tahsil, marl deposits are found in the east of the Sai valley and in an area extending from the Gomati to the Lucknow-Gosainganj Road. The beds extend over an area of 1,500 acres and the thickness of the beds varies from 3 to 4 feet. The estimate of the quantity will thus be about 10,50,000 tons. As a result, Mohanlalganj was recommended by the Geological Survey of India as a suitable site for establishing a cement factory, since the basic material is abundantly available in the shape of marl. In Malihabad, some quantity of Marl has been found.

Reh - Reh or alkaline earth is found in commercial quantities, on the western plains of the district. It is used for the manufacture of glass. Washermen find it a good substitute for soap. From the saline earth are also extracted the minerals known as *khari* or sulphate of soda, *sajji* or impure carbonate of soda and *shora* or saltpetre. There are a few small establishments (*karkhanas*) which manufacture saltpetre by scraping nitrous earth from old walls of houses and the surrounding grounds. There are about 50 acres of soil from which such nitrous earth can be collected.

Pottery clay - Pottery clay is also found in a large quantity all over the district. It is used for the manufacture of different types of toys and various earthen utensils.

Sand - Lastly, an important minor mineral and an essential article for building purposes is sand. It is largely found along the banks of the Gomati.

## I.5 CLIMATE

### 1.5.1 Observatories

There are two observatories in the district, one at Amausi aerodrome, under the charge of a Meteorological Officer and the other at the Central Drug Research Institute (CDRI), under the charge of its Director. In addition to these there are rain-gauge stations in all tahsil headquarters-under the charge of respective Tahsildars.

### 1.5.2 Seasons

The district is situated in the sub-tropical region and its climate can be said to be of sub-tropical monsoon type. It avoids the parching drought and the opposite extremes of heat and cold which are experienced in the Punjab. It is said that seasonality is the keynote of Indian climate and the three seasons-the rainy, the cold and the hot-are well marked off. The first commences with fair regularity in the middle of June and continues till the end of September, but as the monsoon from the Bay of Bengal sweeps over the Uttar Pradesh, the commencement of the rainy season may be as early as the beginning of June or as late as the first or second week of July. The cold weather extends from early October to the end of February. March is a transitional month. The third season extends over the remaining months of the year. In this season the sun gradually moves towards the north and consequently the temperature begins to rise, and so it gradually merges into the hot weather with high temperature and dry westerly winds.

### **1.5.3 Temperature and Humidity**

In winter the temperature is controlled by two factors:

- (i) the slanting rays of the sun during winter, and
- (ii) the development of anti-cyclone conditions in northern India.

The following table shows the mean of maximum and mean of minimum monthly temperatures with the highest and the lowest temperatures ever recorded in the District:-

Month	Mean daily Maximum Temperature in		Mean daily Minimum Temperature in		Highest Maximum Temperature Recorded in		Lowest Minimum Temperature recorded in	
	°F	°C	°F	°C	°F	°C	°F	°C
January	73.9	23.4	47.1	8.4	86	30.2	35	1.67
February	78.6	25.9	51.4	10.8	95	35.0	35	1.67
March	90.8	32.7	60.6	15.9	106	41.2	45	7.22
April	101.4	38.6	70.8	21.6	114	45.6	55	12.75
May	105.4	40.8	78.3	25.8	117	47.2	64	17.80
June	100.2	39.0	81.7	27.7	119	48.9	67	13.90
July	92.4	33.6	79.5	26.4	114	45.6	72	22.20
August	90.5	32.6	78.6	25.9	102	39.0	72	22.20
September	91.9	33.4	76.5	24.8	103	39.2	64	17.80
October	91.4	33.1	66.5	19.2	104	40.0	52	11.10
November	83.9	28.9	54.1	12.3	94	34.5	42	5.55
December	75.9	24.4	47.3	8.5	92	33.2	35	1.67
Annual Average	89.7	32.2	66.0	19.2	119	48.5	35	1.67

In the cold weather the climate is delightful. The days are bright and warm, and the sun is not hot. In summer the district is excessively hot and the temperature has been known to rise as high as 48°. Data collected in recent years show that in the months of April to June on an average of about 3 to 6 hours daily the temperature may exceed 38° C. At this time of the year the heat is aggravated by hot winds and clouds of dust. If the wind is from the west, the atmosphere generally remains cool and pleasant. During 1998-99,

maximum temperature of  $42.6^{\circ}$  and minimum of  $5.0^{\circ}\text{C}$  was recorded. Heat is alleviated by the breeze blowing through the screens. But if the western winds subside or give place to easterly winds then situation changes. The month of May has a mean maximum temperature of  $41^{\circ}\text{C}$ . When the temperature rises abnormally, local storms develop and heat is temporarily relieved in the afternoon by dust storms accompanied by a shower. An important feature of the distribution of temperature is the sudden change from winter to summer and summer to winter. As a result, the spring and autumn are very short-lived. The uniformly high temperature during the rainy season is of great benefit for the quick growth and maturity of *kharif* crops. During February to May the rise in temperature is  $26.8^{\circ}$  while during the rainy season it is only  $6.6^{\circ}$ .

**Humidity** - The following table shows the mean relative humidity in different months during the year:

Month	Mean Relative Humidity (%) at		Average Relative Humidity
	8 hours	17 hours	
January	81	47	64.0
February	71	43	57.0
March	51	25	38.0
April	39	19	29.0
May	46	28	37.0
June	64	51	57.5
July	82	75	78.5
August	86	77	81.5
September	82	71	76.5
October	72	58	65.0
November	73	52	62.5
December	80	54	67.0

In addition to these if the figures for individual days are considered, it will be noted that while humidities of 90% or more may occur in monsoon months low humidity values of less than 10% are not infrequent in the afternoons of summer months. The average humidity at 5 P. M. for April is as low as 19%.

**Rainy Season** - The rainy season starts some time in the latter half of June, rarely earlier.

Rain is by no means continuous for more than a day or two at a time. These rainy spells are separated by oppressive weather. July and August have the highest number of rainy days (17 to 20 in one month). In most seasons there occur intervals of a week or more with little or no rain. These are termed breaks. In certain years these breaks last for weeks when westerly winds set in, less hot and dry but more oppressive than the hot winds of April and May.

**Rainfall** - As a rule the weather remains fine and clear with practically cloudless skies (average 1/10) in the winter season. Early in January the cloudiness slightly increases and the first rains of the cold weather occur. These falls of rain are about three to four in January and February, but are light and extremely beneficial for *rabi* crops.

The normal or average annual rainfall of the district is 37.5" (950 mm) as shown in the following table:

TABLE SHOWING AVERAGE MONTHLY RAINFALL

Month	Rainfall	
	Inches	mm.
January	0.67	17.6
February	0.61	15.5
March	0.33	8.4
April	0.21	5.3
May	0.65	16.5
June	4.22	107.0
July	11.37	289.0
August	10.78	273.0
September	6.91	176.1
October	1.27	82.2
November	0.19	4.8
December	0.31	7.8
Total	37.54	953.2

Lucknow proper has an annual average rainfall of 1016 mm. Rainfall decreases to the south and the west. About 90% of the annual rainfall occurs during the four monsoon months, June to September. The雨iest months are July and August, each contributing about 30% of the rain-fall. During 1998, 754 mm rainfall was recorded against the normal rainfall of 953 mm.

The following table will give an idea of the tahsil-wise distribution of rainfall in different months of the year:

AVERAGE MONTHLY RAINFALL FOR DIFFERENT TAHSILS TO INCHES AND MILLIMETERS

Month	Malihabad		Lucknow		Mohanlalganj	
	ins.	m.m.	ins.	m.m.	ins.	m.m.
January	0.69	17.6	0.76	19.3	0.56	14.2
February	0.51	12.9	0.68	17.3	0.54	13.7
March	0.34	8.6	0.32	8.1	0.31	7.8
April	0.17	4.3	0.26	6.6	0.15	3.8
May	0.61	15.5	0.78	19.8	0.45	11.4
June	4.15	105.0	4.36	111.1	3.90	99.0
July	10.99	279.9	11.86	301.0	10.63	270.0
August	8.83	224.0	11.34	288.0	10.44	265.4
September	8.09	154.8	7.46	189.5	6.67	169.5
October	1.24	31.5	1.37	34.8	1.21	30.8
November	0.17	4.3	0.19	4.8	0.17	4.3
December	0.34	8.6	0.33	8.4	0.27	6.9
Total	34.1.3	86.7	39.71	1008.7	35.30	896.8

### Pressure

The atmospheric pressure at a particular place depends upon the temperature and humidity of the place. Hence, there are variations in the pressure also with the change of seasons. The following table will illustrate the point:

### MEAN STATION LEVEL-PRESSURE IN MILLIBARS

Month	At 8 Hours	At 17 Hours
January	1004.2	1001.4
February	1001.9	998.8
March	998.4	995.0
April	994.4	990.6
May	990.7	996.5
June	986.6	982.8
July	986.1	983.0
August	988.1	985.2
September	992.4	989.1
October	998.4	995.2
November	1002.7	999.2
December	1004.7	1001.9

Note: The average annual Station level pressure has been calculated to be 995.7 and 992.4 at 8 hours and 17 hours 1<sup>ST</sup>.

### Winds

During winter the whole of Uttar Pradesh comes under the region of N.-W. winds known as winter monsoon. In that period the winds in the district are mainly westerly and north-westerly. These are generally dry winds with occasional slight precipitation. The velocity of wind in these months varies from 1.5 to 3.00 kilometres per hour, the maximum velocity occurring during the later part of the season. During March and April the velocity increases. In the months of May and June the wind gradually assumes the character of hot wind called *loo*. Dust storms are frequent in these months and help in lowering the temperature. They precede the onset of the regular monsoon. The wind becomes excessively hot and dry during the day, sometimes with the speed of 25-30 kilometres per hour. Throughout the rainy season the winds are north-easterly and easterly and their velocity decreases as the rainy season comes to close. In October the average velocity is about one 1.5 kilometres per hour. Considering the average velocity, the wind-speed is 1.5 to 2.5 kms. per hour, suggesting the prevalence of a very light wind. About

52% of the days are calm in the morning hours and about 75% of the days in the afternoon. The following table gives an idea of the velocity and wind direction in different months of the year:

Month	Velocity m.p.h.	Mean wind at 8 hours	Direction at 17 hours
January	1.3	N87W	N86W
February	1.7	N69W	N54W
March	2.3	N82W	N80W
April	2.4	N81W	N81W
May	2.5	N80W	N16W
June	2.6	N85W	N31W
July	2.2	S81E	E
August	1.9	S82E	N36E
September	1.7	S77E	N56W
October	1.1	S66E	N38E
November	0.9	N82W	N79W
December	0.1	N45W	N81W

## I.6 FLORA AND FAUNA

The soils of Lucknow are rich enough for the growth of all kinds of trees and grasses which are generally found in this part of the Gangetic Plain. There are hardly any species grown which may be said to be peculiar to this district. The agricultural crops grown in the district are also the same which are grown in the adjoining districts. The presence of a larger amount of sub-soil water, however, gives rise to a larger growth of vegetation than is to be found in districts further west or south of Lucknow. It is reported that out of five or six hundred species of flora recognized in this district, as many as 250 can be found in the National Botanic Gardens itself. The variety of soil and water-content is also responsible for the presence of *dhak jungles* in or near the *usar* areas of tahsil Malihabad, and for the thick vegetation to be found along the banks of the river Gomati and its tributaries,

particularly the Kukrail. The usual trees which are to be met with in the district are mango, guava, *aonla*, *bel*, *jamun*, *ber*, lemon, *khajur*, *babul*, *ashok*, varieties of bamboo, banyan, *gular*, *palas*, *madar*, *dhak*, *sheesham*, *mahua*, *neem* and *pipal*. There is hardly any habitation where *neem* and *pipal* are not to be found. An attempt is also being made not only to locate but also to cultivate scientifically a number of medicinal plants which are extensively used in Ayurvedic medicines.

### Forest

There is evidence to show that the district of Lucknow at one time had a considerable area under forests. But continuous growth of population and the consequent need for more extensive land for agriculture resulted in a large part of this forest being cut down. At present there is no organised forest in the district at all, and the trees that are to be found are those which are wild and are of a variety which can stand the climate of the district. Large areas of *usar* land are almost completely devoid of trees except those of stunted growth. There was till recently no Reserve Forest in the district nor does the district claim to have any tree of commercial value except the *babu* and the *mahua*. The *babu* furnishes a very hard wood used for making wheels for bullockcarts and is also used for the preparation of charcoal, the bark furnishing excellent material for the tanning of leather. The *mahua* yields not only food for the people but its flowers furnish the basic material for the preparation of country liquor. Wood from *mahua* and mango trees is extensively used as building material. *Sheesham* trees are also found in small patches, which provide valuable timber. Extensive *dhak* jungles existed in the parganas of Malihabad, Mahona and Mohanlalganj, but due to rising demand and large area has been cleared.

## Soil-Erosion

The problem of soil-erosion is not as serious in Lucknow as in some other districts of Uttar Pradesh. Due to the almost level nature of the land and low gradients towards the river beds, only sheet-erosion to a limited extent takes place. Erosion is also to be found along the course of the tributaries of the Gomati, of which the Kukrail is a typical example.

## FAUNA

Mammals, birds, reptiles and fish usually found in the Gangetic Plain are also met with in Lucknow. Among mammals are included a large variety of animals both domestic and wild. The domestic animals are those directly concerned with the agricultural life of the district. As the district has very little forest area the larger carnivore like tigers and leopards are conspicuous by their complete absence, except for an occasional leopard which strays into the district from the Ghagra valley or from the foot-hills of Bahraich. The kings of Avadh took delight in taking out hunting parties and even constructed hunting-lodges, which shows that, at any rate, at that time there must have been a considerable number of game animals available for *shikar*. But the growth of population and the constant pressure on land resulted in the disappearance of much of the wide tracts of jungles which were once covered with long grasses and offered an asylum to wild animals. The wild animals now found, in the district are the *nilgai*, black-buck, orient deer, antelope, deer, fox, hedgehog, wolf, hyenas and the ubiquitous jackal. Wild pigs are also found in large numbers. The hyenas find sanctuary among the high banks of the rivers and, the *nala*s, and they have often proved not only a nuisance but a great menace to the local population when they take to lifting children. **Black-bucks** (*mriga*) are to be found in small herds in open grassy places. **Nilgais** or the blue-bulls also called *nilghora*, *rojh*, and *banrojh* are

numerous and multiply very fast. They roam about in large herds and cause considerable damage to agriculture. Hares are to be found everywhere and even in the compounds of bungalows in the city. There is no animal which is particularly indigenous to Lucknow district.

### Birds

Domestic birds which are found all over the Gangetic Plain are also found in Lucknow. The most common bird is the house-crow, no habitation is without them. Redvented *bulbul* or molpaster cafer (*linnaeus*) is a small bird with a partially-crested black head and a crimson patch under the tail. It is found only in gardens and light scrub jungles. It is often kept as a pet in the city of Lucknow which was once famous for its bird-fights. *Harewa* or jerdon's chloropsis, the common *maina*, the weaver-bird or *baya*, and the house sparrow or *gauraiya* are frequently met with. The spotted dove and other common varieties of birds are also found. The red *munia* or waxbill (*la!*) or *la! munia* (*amandava*) is a small cage-bird with brownish colour sparsely striped with white red bill and crimson rump, and is also a favourite pet with the people in Lucknow. The red-whistler *bulbu*/with its cheerful call and very lively habits is a very common garden bird.

Amongst the *mainas*, the common *maina*, the bank *maina*, the *brahmunj maina* and the pied *maina* are commonly met with. Amongst the doves, the ring-dove, the spotted-dove and the red turtle-dove are commonly met with and the rufous turtle dove visits the fields during winter in very large numbers.

Amongst the cuckoo class, the *koel*, the *papaya*, and the brain-fever-bird are common and the pied-crested cuckoo flies from Africa during the monsoon. The *koel* lays its eggs in the nest of crows, while the other two use the babblers as foster-parents. *Koel*

is similar to the house-crow but slender and with a long tail, and is well-known as a singing bird.

Among other pests the large Indian parakeet (*hiraman tota*), roseringed parakeet (*desi tota*) and the blossom head parakeet (*tua tota*) are the three varieties of the parrot family which are found in the district.

Blue-rock pigeon (*kabutar*) is the familiar semi-domesticated slate-grey bird which frequents grain godowns, warehouses, *mandis* (grain-markets), railway stations, old and disused wells and buildings as well as jungles. The green pigeon or *hariaj* is another beautiful bird commonly found in orchards and gardens.

The common or grey quail (*ghaghā bater*), which is a winter visitor, is found in the open country with standing crops and in grass lands, and is of the size of a half-grown partridge. It is generally found in sandy plains with scrub jungle and is said to give good sport. They are also domesticated and are trained for bird-fight which, though it has lost its place among the sports of the gentry of old Lucknow, still continues to be popular.

Both the grey quail and the resident rain quail (*chinak bater*) are trained for fights. Apart from the above, there are the button quail and the bustard quail, both known locally as *lava*.

The bar head goose (*hans*) and the grey-leg goose are migratory birds arriving in the month of October along with the ducks, from colder climates across the Himalayas and feed on weeds in the *jhils* and on the green shoots of winter crops.

The district has a number of *jhils*, is the home of the four species of resident ducks, viz., the comb duck (*nakta*) the whistling teal (*pilahi*), the cotton teal (*giri*) and the spot-bill

duck. All the migratory ducks such as, the pintail, the pigeon, the red-crested pochard, the common pochard, the tufted pochard, the shoveller, the gadwall, the common teal and the gardway teal, are also found.

The ducks, the snipes and the partridges are the predominant game birds. There is a large number of other birds like the great horned owl, the vulture, the falcon and the *saras* to be found here.

Amongst migratory snips, the pintail, fantail and jack snipes are found in very large numbers. The beautiful resident painted snipe is fairly common. Peacocks are also found in all parts of the district. The grey partridge, about the size of a pigeon, is found in the dry scrub jungles and the black partridge is found in grassy patches. The grey partridge is a very common and favourite bird. The *salas*, the tallest Indian bird is a common sight by the side of the road 'tar the railway line. Two more species of cranes visit India viz. *the demoiselle* crane of Africa and the common crane from the, Central Asian wilderness. They are known as *king kulang*

### Reptiles

Different varieties of snakes are to be found everywhere in the district. A large number of harmless snakes along with the deadly cobra and the russel viper, the innocent *domuhi* and other reptiles are generally found. The majority of snakes are non-poisonous, but a number of people fall a prey to snake-bite.

### Fish

The fish of the district occupy an important place, and *more than 25* different species have been found. They are caught in perennial rivers, *natural jhils* or lakes, tanks

and in flooded fields. The Gomati abounds in fish, and fishing is largely done at the junction of the Kukrail nala with the Gomati, below Bhainsakund. The Fisheries Department of the Government also breed fishes in Lucknow. Important species of fish are *rohu*, *kalahan!*, *naini*, *mahisher* and *lakaar*. The fish furnish a source of food for those who are habituated to non-vegetarian diet.

## CHAPTER – II

### POPULATION AND LAND RESOURCES

The analysis of relationship between population and land resources indicates the changes land resources, which are fixed, would experience on account of growing population. It is evident that sever pressure has been generated on cultivated and cultivable land and depletion of other land based resources like forest, pasture land, area of miscellaneous trees, etc. has taken place due to growing population. In this chapter, characteristics of population and land resources in Lucknow district have been examined.

#### **II.1 POPULATION**

As per the 1991 Census, population in Lucknow district was 27.63 lakhs. In this population, males constituted 53.60 per cent and Females 46.40 per cent. The urban population was 62.66 per cent in comparison with rural population of 37.34 per cent in the district. The proportion of scheduled castes population was 21.88 per cent while Scheduled Tribes population was only 0.04 per cent. The sex ratio was 866 females per thousand males while the density of population in the district was 1093 person per square kilometre. As far the comparison of population characteristics of the Lucknow district with the state as a whole is concerned, no substantial difference is evident in terms of shares of male and female population in total population were concerned. However, the district had much higher percentage of urban population than the ratio of urban population in total population of the state. The percentage of scheduled castes population in district was near to the State level share of SC population of around 21 per cent. In the district, sex ratio

was 866 which had been lower by 13 females in comparison with the sex ratio in the State of Uttar Pradesh. The density of population was very high in the district in comparison with the State. In Table II.1, population characteristics of Lucknow district vis-à-vis the State of Uttar Pradesh have been shown.

**Table II.1: Population Characteristics of Lucknow District and Uttar Pradesh:  
1991 Census**

Sl.No.	Items	Lucknow	Uttar Pradesh	Lucknow District as % of Uttar Pradesh
1.	Population	2762801 (100.00)	139112000 (100.00)	1.99
2.	Male	1480839 (53.60)	74037000 (53.22)	2.00
3.	Female	1281962 (46.40)	65075000 (46.78)	1.97
4.	Rural	1031577 (37.34)	11150600 (80.16)	0.93
5.	Urban	1731224 (62.66)	27606000 (19.84)	6.27
6.	Scheduled Castes	604410 (21.88)	29276455 (21.05)	2.06
7.	Scheduled Tribes	1124 (0.04)	287901 (0.21)	0.39
8.	Sex Ratio	866	879	
9.	Density (Per Sq.Km.)	1093	473	

Note : Figures in bracket indicate the percentage.

Source: Census Handbook, 1991.

## **II.2 POPULATION IN AGE GROUPS**

The classification of population of Lucknow district in different age-groups as given in Table II.2 shows that the population of males, females and rural in age-group of 0-4 constituted around 12 per cent in total population of the district. While in urban areas of the district share of this population group was around 11 per cent. The proportions of males, females and total population in different age classifications were found to be

generally similar in district to that in the state. The percentage of population in working age group was relatively higher in urban part of the district as compared to its rural areas. However, in rural areas of the district, share of population in age-group of 50 years and above was higher than in urban areas. In Table II.2, age-wise classification of population of Lucknow district has been shown.

Table II.2: Age-wise Classification of Population in Lucknow District: 1991 Census

Age Group	Male	Female	Total	Rural	Urban
0—04	170741 (11.53)	165886 (12.94)	336627 (12.18)	146897 (14.24)	189730 (10.96)
05—09	201838 (13.63)	183064 (14.28)	384902 (13.93)	158657 (15.38)	226245 (13.07)
10—14	196804 (13.29)	164989 (12.87)	361793 (13.09)	130701 (12.67)	231092 (13.35)
15—19	173110 (11.69)	129222 (10.08)	302332 (10.94)	99031 (9.60)	203301 (11.74)
20—24	143938 (9.72)	123453 (9.63)	267391 (8.68)	92326 (8.95)	175065 (10.11)
25—29	122317 (8.26)	117555 (9.17)	239872 (9.68)	83970 (8.14)	155902 (9.01)
30—39	211908 (14.31)	194474 (15.17)	406382 (14.71)	140913 (13.66)	265469 (15.33)
40—49	159338 (10.76)	127171 (9.92)	286509 (10.37)	105118 (10.19)	181391 (10.48)
50—59	61899 (4.18)	43202 (3.37)	105101 (3.81)	42088 (4.08)	63013 (3.64)
60+	38946 (2.63)	32946 (2.57)	71892 (2.61)	31876 (3.09)	40016 (2.31)
TOTAL	1480839 (100.00)	1281962 (100.00)	2762801 (100.00)	1031577 (100.00)	1731224 (100.00)

Note : Figures in bracket indicate the percentage.

Source: Census Handbook, 1991.

### **II.3 WORKING POPULATION**

The working population in total population of Lucknow district was 29.59 per cent while the same was 32.20 per cent in the state. The percentage of main workers was

28.67 in Lucknow district and 29.73 per cent in the State. The marginal workers were 0.91 per cent in total population of the district while the same were 2.47 per cent in the state.

In Table II.3, working population in Lucknow district and the state has been shown.

Table II.3 : Working Population in Lucknow District and Uttar Pradesh: 1991 Census

Item	Lucknow District	Uttar Pradesh
Total Population	2762801 (100.00)	139112000 (100.00)
Total Main Workers	792228 (28.67)	41361000 (29.73)
Total Marginal Workers	25268 (0.91)	3438000 (2.47)
Total Workers	817496 (29.59)	44799000 (32.20)

Note : Figures in bracket indicate the percentage.

Source: Census Handbook, 1991.

#### **II.4 CLASSIFICATION OF WORKERS**

Though agriculture provided employment to maximum number of workers in Lucknow district as well as in the state but the share of those engaged in agriculture was much lower in Lucknow district as against the state as a whole. The proportion of cultivators was 29.73 per cent in the district during 1991 census while of the same had been 53.26 per cent in the state. Similarly, the agricultural labourers constituted 8.70 per cent of total workers in the district as against 18.94 per cent in the state. Non-household industry, construction, trade and commerce, transport and other services provided greater employment to workers in comparison with the employment in these sectors at the state level. While industry and mining and household industry provided employment to relatively lower percentage of the total workers in the district as compared with the state. The Table

28.67 in Lucknow district and 29.73 per cent in the State. The marginal workers were 0.91 per cent in total population of the district while the same were 2.47 per cent in the state.

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II.4 shows classification of workers as given in 1991 census of Lucknow district and the State of Uttar Pradesh.

Table II.4: Classification of Workers of Lucknow District and Uttar Pradesh: 1991 Census

Category	Lucknow District	Uttar Pradesh
Cultivators	235538 (29.73)	22031000 (53.26)
Agriculture Labourers	68893 (8.70)	7833000 (18.94)
Animal Husbandry and Plantation	12184 (1.54)	296000 (0.72)
Industry and Mining	463 (0.06)	35000 (0.08)
Household Industry	16673 (2.10)	997000 (2.41)
Non-Household Industry	67427 (8.51)	220800 (5.34)
Construction	26849 (3.39)	511000 (1.24)
Trade & Commerce	112662 (14.22)	2551000 (6.17)
Transport, Storage and Communication	38288 (4.83)	771000 (1.86)
Other Services	213251 (26.92)	4128000 (9.98)
Total Main Workers	792228 (100.00)	41361000 (100.00)

Note: Figures in bracket indicate the percentage of Total Main Workers.

Source: Census Handbook, 1991.

## II.5 LITERACY

The literacy level in Lucknow district was 16 percentage point higher than the State level. It had been 58 per cent in the district while the same was 42 per cent in the state. The male and female literacy level was also higher in the district than the state. But in rural part of the district, literacy level among males, females and total population had been lower in comparison with the rural areas of the state. In case of urban population, literacy

level was higher in the district as compared to the State in case of males, females and total urban population as the following Table II.5 shows.

**Table II.5 : Literacy Rate in Lucknow District and Uttar Pradesh: 1991 Census**

(Percentage)

Item	Lucknow District	Uttar Pradesh
<b>Population</b>	58.00	41.60
Male	67.00	55.73
Female	47.00	25.31
<b>Rural</b>		
Male	49.00	52.05
Female	19.00	19.02
<b>Total</b>	35.00	36.66
<b>Urban</b>		
Male	77.00	69.98
Female	62.00	50.38
<b>Total</b>	70.00	61.00

Source: Census Handbook, 1991.

## **II.6 POPULATION GROWTH**

Keeping in view the fast growth in population of the district, it is going to remain a densely populated district in the State. The growth projection of population of the district as well as in the state of Uttar Pradesh as shown in Table II.6 reveals that there would be a net addition of 1891632 persons in the total population of the district during 1990-91 and 2009-10. The population of males, females and total would increase by 64 per cent, 74 per cent and 69 per cent respectively during this period. While the similar increase at the state level would be by 29 per cent, 39 per cent and 34 per cent respectively. Thus, Lucknow district would experience a high population growth during the period 1991-2010 which would be much higher in comparison with the growth in population in whole of the state. The impact of such high growth in population of Lucknow district would be that the district which had less than 2 per cent of the total population of the state in 1990-91 and this share of the district would increase to 2.50 per cent during 2009-10.

**Table II.6: Projected Population Growth In Lucknow District and Uttar Pradesh:  
1990-91 to 2009-10**

Year	Lucknow District			Uttar Pradesh		
	Male	Female	Total	Male	Female	Total
1990-91	1480839	1281962	2762801	74036957	65075330	139112287
2000-01	1946973	1734443	3681416	87466301	78586558	166052859
2001-02	1999931	1789598	3789529	88367204	79891095	168258299
2002-03	2052889	1844753	3897642	89268107	81195632	170463739
2003-04	2105847	1899908	4005755	90169010	82500169	172669179
2004-05	2158805	1955063	4113868	91069913	83804706	174874619
2005-06	2211763	2010218	4221981	91970816	85709243	177080059
2006-07	2264721	2065373	4330094	92871719	86413780	179285499
2007-08	2317679	2120528	4438207	93772622	87718317	181490939
2008-09	2370637	2175683	4546320	94673525	89022854	183696379
2009-10	2423595	2230838	4654433	95574428	90327391	185901819

## **II.7 PER CAPITA AVAILABILITY OF LAND**

Land is fixed in size and cannot be enlarged with the growth in population. Naturally as the population increases, per capita availability of land for various purposes is going to be reduced. In this section, an attempt has been made to find that given the increase in population, how much per capita land would be the availability in case of reported area and net cultivated area. The year-wise status has been presented in Table II.7. The table shows that per capita availability of reporting area as well as net cultivated area has been lower in Lucknow district than the state upto 2002-03 and the same trend will continue upto 2009-10. The decline in both cases would also be lower in the district than the state. The district of Lucknow has a high density of population which makes per capita availability of land lower in the district than the State. It is also evident that per capita availability of reported area and net cultivated area would not experience substantial decline in the district as well as in the state, which would be an outcome of growing preference for smaller family size, particularly in urban areas.

**Table II.7. Per Capita Availability of Reported Area and Net Cultivated Area in Lucknow District and Uttar Pradesh**

Year	Lucknow District			Uttar Pradesh		
	Estimated Population of Lucknow District	Per Capita Availability of Land	Reported Area (Hect.)	Net Cultivated Area (Hect.)	Estimated Population of Uttar Pradesh	Per Capita Availability of Land
Reported Area (Hect.)	Net Cultivated Area (Hect.)	Reported Area (Hect.)	Net Cultivated Area (Hect.)	Reported Area (Hect.)	Net Cultivated Area (Hect.)	Reported Area (Hect.)
1990-91	2762801	0.091	0.055	139112287	0.175	0.119
2000-01	3681416	0.068	0.039	166052859	0.146	0.101
2001-02	3789529	0.066	0.038	168258299	0.144	0.100
2002-03	3897642	0.065	0.037	170463739	0.142	0.099
2003-04	4005755	0.063	0.036	172669179	0.140	0.098
2004-05	4113868	0.061	0.035	174874619	0.138	0.097
2005-06	4221981	0.060	0.034	177080059	0.137	0.096
2006-07	4330094	0.058	0.033	179285499	0.135	0.095
2007-08	4438207	0.057	0.032	181490939	0.133	0.095
2008-09	4546320	0.055	0.032	183696379	0.132	0.094
2009-10	4654433	0.054	0.031	185901819	0.130	0.093

## **II.8 LAND HOLDINGS : NUMBER**

During 1985-86, number of marginal and small holdings constituted 96.17 per cent of total holdings in the district while the same was 90.83 per cent in Uttar Pradesh as a whole. Thus, the number of marginal and small holdings in the total holdings in Lucknow district was larger by 5.34 per cent during this period. With the fragmentation of holdings due to population increase and large scale diversion of agricultural land for non-agricultural purposes, number of marginal and small holdings, on the basis of projection, comes to 90.05 per cent in the district and 88.20 per cent in the state during the year 2009-2010. Thus, the district of Lucknow will continue to have majority of land holdings as marginal and small. The same trend will also prevail in the state as a whole but the gap between

the district and the state would be narrowed down to 1.85 per cent by 2009-10. One striking point is also evident that the number of marginal holdings in Lucknow district was lower (70.17 per cent) than the state (72.59 per cent) during 1985-86. But the projection as shown in Table II-8 indicates that the number of marginal holdings in total holdings of Lucknow district would be 85.62 per cent as against 75.68 per cent in the state in 2009-10. Therefore, it can be inferred that with the passage of time, marginalization of land holdings in Lucknow district would be faster than what be at the state level.

**Table 2.8: Number of Holding in Lucknow District and Uttar Pradesh : 1990-91 to 2009-10**

(Number in thousand)

Year	Kanpur Nagar (in thousand numbers)				U.P. (in thousand numbers)			
	Marginal	Small	Medium & large	Total	Marginal	Small	Medium & large	Total
1985-86	120 (70.17)	34 (19.88)	17 (9.95)	171 (100.00)	13782 (72.59)	2964 (15.61)	2239 (11.80)	18985 (100.00)
1990-91	156 (74.28)	37 (17.63)	17 (8.09)	210 (100.00)	14819 (73.82)	3118 (15.53)	2137 (10.65)	20074 (100.00)
1995-96	167 (77.67)	33 (15.35)	15 (6.98)	215 (100.00)	15574 (75.59)	2983 (14.48)	2046 (9.93)	20603 (100.00)
2000-01	168.95 (80.40)	28.80 (13.70)	12.4 (5.90)	210.15 (100.00)	15017.55 (74.49)	3103.25 (15.39)	2038.90 (10.12)	20159.70 (100.00)
2001-02	169.34 (80.95)	27.95 (13.37)	11.88 (5.68)	209.18 (100.00)	15057.26 (74.63)	3100.30 (15.37)	2019.28 (10.00)	20176.84 (100.00)
2002-03	169.73 (81.52)	27.12 (13.02)	11.36 (5.46)	208.21 (100.00)	15096.97 (74.76)	3097.35 (15.34)	1999.66 (9.90)	20193.58 (100.00)
2003-04	170.12 (82.08)	26.28 (12.68)	10.84 (5.24)	207.24 (100.00)	15136.68 (74.89)	3094.40 (15.31)	1980.04 (9.80)	20211.12 (100.00)
2004-05	170.51 (82.66)	25.44 (12.34)	10.32 (5.00)	206.27 (100.00)	15176.39 (75.03)	3091.45 (15.28)	1960.42 (9.69)	20228.26 (100.00)
2005-06	170.90 (83.24)	24.60 (11.98)	9.80 (4.78)	205.30 (100.00)	15216.10 (75.16)	3088.50 (15.25)	1940.80 (9.59)	20245.40 (100.00)
2006-07	171.29 (83.83)	23.76 (11.63)	9.28 (4.54)	204.33 (100.00)	15255.81 (75.29)	3085.55 (15.23)	1921.18 (9.48)	20262.54 (100.00)
2007-08	171.63 (84.42)	22.92 (11.27)	8.76 (4.31)	203.36 (101.00)	15295.52 (75.42)	3082.60 (15.20)	1901.56 (9.38)	20279.68 (100.00)
2008-09	172.07 (85.02)	22.08 (10.91)	8.24 (4.07)	202.39 (100.00)	15335.23 (75.55)	3079.65 (15.17)	1881.94 (9.27)	20296.82 (100.00)
2009-10	172.46 (85.62)	21.24 (10.55)	7.72 (3.83)	201.42 (100.00)	15374.94 (75.68)	3076.70 (15.15)	1862.32 (9.17)	20313.96 (100.00)

Note : Figures in bracket indicate the percentage

Source : Sankhakiya Patrika

## II.9 LAND HOLDINGS: AREA

The pattern of skewed distribution of land area under different holdings is a common characteristics in the State of Uttar Pradesh. But it is more in the district of Lucknow. The marginal and small holdings which constituted 96 per cent in total holdings commanded 65 per cent of land area in the district while 91 per cent of such holdings in State had 52 per cent of area under such land category during 1985-86. Like-wise 10 per cent medium and large holdings had 12 per cent of total area in the district while the same land holdings of 12 per cent in the State had 24 per cent of land area. The similar trend appears to continue till 2009-2010 as the Table II.9 showed.

Table II.9: Area of Different Holdings in Lucknow District and Uttar Pradesh : 1990-91 to 2009-10  
(Thousand Hectares)

Year	Lucknow						Uttar Pradesh					
	Marginal	Small	Semi-Medium	Medium	Large	Total	Marginal	Small	Semi-Medium	Medium	Large	Total
1985-86	56.40 (34.95)	48.10 (29.80)	37.40 (23.17)	15.90 (9.85)	3.60 (2.230)	161.4 (100.0)	4993.3 (28.29)	4114.9 (23.32)	4313.1 (24.44)	3377.4 (19.14)	849.5 (4.81)	17648.2 (100.0)
1990-91	65.20 (37.75)	52.0 (30.11)	35.30 (20.44)	17.00 (9.85)	3.20 (1.85)	172.7 (100.0)	5653.3 (31.43)	4390.7 (24.41)	4206.7 (23.39)	3042.0 (16.91)	694.0 (3.86)	17986.7 (100.0)
1995-96	74.50 (43.38)	47.30 (27.55)	33.60 (19.57)	13.80 (8.04)	2.50 (1.46)	171.7 (100.0)	6023.4 (34.02)	4214.5 (23.81)	4101.30 (23.17)	2799.7 (15.82)	562.30 (3.98)	17701.2 (100.0)
2000-01	86.45 (47.96)	46.9 (26.02)	31.90 (17.70)	12.90 (7.16)	2.10 (1.16)	180.25 (100.0)	6644.7 (37.04)	4265.05 (23.78)	4000.80 (22.30)	2560.35 (14.27)	467.30 (2.61)	17938.2 (100.0)
2001-02	88.84 (48.82)	46.82 (25.73)	31.56 (17.35)	12.72 (6.99)	2.02 (1.11)	181.96 (100.0)	6768.96 (37.64)	4275.16 (23.77)	3980.70 (22.13)	2512.48 (13.97)	448.30 (2.49)	17985.8 (100.0)
2002-03	91.23 (49.67)	46.74 (25.44)	31.22 (17.00)	12.54 (6.83)	1.94 (1.06)	183.67 (100.0)	6893.22 (38.23)	4285.27 (23.78)	3960.60 (21.96)	2464.61 (13.67)	429.30 (2.38)	18033.0 (100.0)
2003-04	93.62 (50.50)	46.66 (25.17)	30.88 (60.66)	12.36 (6.67)	1.86 (1.00)	185.38 (100.0)	7017.48 (38.81)	4295.38 (23.76)	3940.50 (21.79)	2416.74 (13.37)	410.30 (2.27)	18080.4 (100.0)
2004-05	98.01 (61.32)	46.58 (24.90)	30.54 (16.32)	12.18 (6.51)	1.78 (0.95)	187.09 (100.0)	7141.74 (39.40)	4305.49 (23.75)	3920.40 (21.63)	2368.87 (13.06)	391.30 (2.10)	18127.8 (100.0)
2005-06	98.40 (52.11)	46.50 (24.63)	30.20 (16.00)	12.00 (6.36)	1.70 (0.90)	188.80 (100.0)	7266.0 (39.98)	4315.60 (23.74)	3900.30 (21.46)	2321.00 (12.77)	372.30 (2.05)	18175.2 (100.0)
2006-07	100.79 (52.91)	46.42 (24.37)	29.86 (15.67)	11.82 (6.20)	1.62 (0.85)	190.51 (100.0)	7390.26 (40.56)	4325.71 (23.74)	3880.20 (21.29)	2273.13 (12.47)	353.30 (1.94)	18222.6 (100.0)
2007-08	103.18 (53.67)	46.34 (24.11)	29.52 (15.36)	11.64 (6.06)	1.54 (0.80)	192.22 (100.0)	7514.52 (41.13)	4335.82 (23.73)	3860.10 (21.13)	2225.26 (12.18)	334.30 (1.83)	18270.0 (100.0)
2008-09	105.57 (54.44)	46.26 (23.85)	29.18 (15.05)	11.46 (5.91)	1.46 (0.75)	193.93 (100.0)	7638.78 (46.70)	4345.93 (23.73)	3840.00 (20.96)	2177.39 (11.89)	315.30 (1.72)	18317.4 (100.0)
2009-10	107.96 (55.18)	46.18 (23.60)	23.84 (14.74)	11.28 (5.77)	1.38 (0.71)	115.64 (100.0)	7763.04 (42.27)	4356.04 (23.72)	3819.90 (20.80)	2129.12 (11.60)	296.30 (1.61)	18364.8 (100.0)

Note : Figures in bracket indicate the percentage.

Source: Sankhyakiya Patrika.

## **II.10 CONCLUSION**

As per 1991 census, population in Lucknow district was 27.63 lakh and out of this population, share of urban population was much higher in the district than the proportion of urban population in total population of the state. The population of Scheduled Castes constituted 22 per cent. The sex ratio was 866 females per thousand of males and the density of population in the district was much higher than the state. The proportions of males and females population in the district was the same as in the state. However, the district had much higher proportion of urban population. The population of the district in the working age-group was higher in its urban part in comparison with the working population in the urban areas of the state. The share of working population in the district was around 30 per cent. Though agriculture provided employment to largest number of workers but the proportions of those employed as cultivators and agricultural labourers were lower in the district than the state. Employment in non-household industry, construction, trade and commerce and other services was higher in the district than the state. The literacy level in the district was found to be higher than the state level. Keeping in view the past trend in population growth, the district of Lucknow is likely to remain highly populated district in the state. The per capita availability of land would not be reduced to any greater extent in Lucknow district but the analysis suggests that whatever decline would come that would be comparatively lower in the district than the state. It is also the possibility that marginalization of land holdings would be higher in the district as compared to the state because of the higher skewed distribution of land among different land size groups in Lucknow district than the State.

## CHAPTER III

### TRENDS AND PROJECTIONS OF LAND USE PATTERN

The changes in land use pattern are determined by the population growth which set the demand of land for various purposes. The state interventions also attempt to promote a standard land use pattern but the changes which appear over the years are influenced largely by the needs of the people. In this chapter, changes in different type of land uses in Lucknow district after every five years starting from 1980-81 to 2000-2001 have been examined and analyzed. Besides, a projection of change in different land uses upto 2009-10 has also been presented.

#### III.1 TRENDS IN LAND USE PATTERN

There has been minor change in the reporting area of Lucknow district from 250757 hect. in 1980-81 to 251853 hect. during 2000-01. The forest area which constituted 3.78 per cent of reporting area in 1980-81, increased to 4.52 per cent in 1985-86 and it remained the same upto 1995-96. But as on 2000-01, forest area showed substantial increase of 8.33 per cent in the district. The area of barren land in the district marginally increased during successive periods from 4.42 per cent of reporting area in 1980-81. Its area declined to 3.59 per cent in 2000-01. The land area used for various non-agricultural purposes had been substantial during all the five years considered here. The area put to use of non-agricultural purposes which was 9.44 per cent of reporting area in 1980-81, declined to 9.38 per cent and 9.39 per cent in 1985-86 and 1990-91 respectively. It increased to 10.27 per cent in 1995-96 but was reduced again to 9.49 per cent in 200-01. The culturable waste land constituted 5.29 per cent of the reporting area in 1980-81 which

shows declining trend. The area of pasture land had been constant at 1.34 per cent in 1980-81, 1985-86 and 1990-91. Therefore, it stagnated at 1.24 per cent in 1995-96 and 2000-01. The area under miscellaneous trees was 3.24 per cent of reporting area in 1980-81 but in subsequent years, it showed declining trend to 0.36 per cent in 2000-01. The area under current and other fallow land had been substantial in the district. It showed fluctuating trend from 1980-81 to 2000-01. The net area sown also indicated fluctuation from year to year. Its proportion in reporting area of the district was 57.14 per cent in 1980-81. It increased to 60.52 per cent in 1985-86 but decreased normally to 60.60 per cent in 1990-91. In 1995-96 and 2000-01, share of net area sown in reporting area declined further to 53.99 per cent and 56.46 per cent respectively. In Table III.1, trend in land use pattern of Lucknow district has been shown.

**Table III-1 Trends in Land Use Pattern of Lucknow District**

Land Use Category	1980-81	1985-86	1990-91	1995-96	2000-01
Reporting Area	250757 (100.00)	252122 (100.00)	252122 (100.00)	252142 (100.00)	251853 (100.00)
Forest	9472 (3.78)	11408 (4.52)	11408 (4.52)	11408 (4.53)	20967 (8.33)
Barren Land	11091 (4.42)	10718 (4.25)	11043 (4.38)	9594 (3.80)	9039 (3.59)
Land Under Non-agricultural Uses	23668 (9.44)	23651 (9.38)	23651 (9.38)	25907 (10.27)	23904 (9.49)
Culturable Waste	13276 (5.29)	11793 (4.68)	10708 (4.25)	10194 (4.04)	7190 (2.85)
Permanent Pasture	3369 (1.34)	3381 (1.34)	3381 (1.34)	3134 (1.24)	3127 (1.24)
Miscellaneous Trees	8113 (3.24)	5461 (2.17)	5451 (2.16)	4162 (1.66)	919 (0.36)
Current Fallow	27609 (11.01)	17884 (7.09)	20172 (8.00)	33880 (13.44)	29539 (11.73)
Other Fallow	10889 (4.34)	15253 (6.05)	13527 (5.37)	17735 (7.03)	14974 (5.95)
New Area Sown	143270 (57.14)	152573 (60.52)	152781 (60.60)	136128 (53.99)	142194 (56.46)

Note : Figures in bracket indicate the percentage

On the whole, changes in land use pattern of Lucknow district reveals that from the base year of 1980-81 to the year 2000-01, net area sown, barren land area under permanent pasture and miscellaneous trees have declining trend. While the percentage of forest area, current fallow and other fallow have increased over the years.

### **III.2 CHANGES IN AREA UNDER DIFFERENT LAND USES**

In this section, it has been analyzed that how much changes could occur in different type of land used within a period of five years. The period considered for the exercise is 1985-86 over 1980-81, 1990-91 over 1985-86, 1995-96 over 1990-91 and 2000-2001 over 1995-96. The exercise as attempted in Table III.2 shows that there were nominal shifts in the reporting area during all the periods. The increase in area under forest was by 20.44 per cent in 1985-86 over 1980-81. During subsequent periods, there was no change in forest area but in 2000-2001 forest area was found to jumped up by 83.79 per cent over 1995-96. There was nominal shift in the area of barren land in 1985-86 over 1980-81. During 1995-96 over 1990-91 and 2000-2001 over 1995-96, area of barren land showed negative growth of 4.80 per cent and 11.33 per cent respectively. The area of barren land decreased 0.09 per cent in 1990-91 over 1985-86. The area used for non-agricultural purposes demonstrated negative shift in 1985-86 over 1980-81 and 2000-2001 over 1995-96. But in 1995-96 over 1990-91, area put to use of non-agricultural purposes increased by 9.54 per cent. The area of culturable waste declined by 11.17 per cent 6.36 per cent 13.12 per cent and 25.06 per cent during successive periods respectively. In case of area under permanent pasture, it showed negative shift during last two years of 1995-96 over 1990-91 and 2000-2001 over 1995-96. There was substantial decline in area under miscellaneous trees in Lucknow district. In respect of current fallow, its area was reduced by 35.22 per cent in 1985-86 over

1980-81 and during two subsequent years, its area experienced increase. But it was reduced by 12.81 per cent in 2000-2001 over 1995-96. The area under other fallow increased during the first period. It then decreased by 11.32 per cent in 1990-91 over 1985-86. Thereafter, area of other fallow showed positive growth of 31.11 per cent in 1990-91 over 1995-96. However, it was reduced again by 15.57 per cent during the last period. The shift in the net area sown of the district was by 6.49 per cent in 1985-86 over 1980-81. In 1990-91 over 1985-86 and 1995-96 over 1990-91, net area sown was reduced by 0.14 per cent and 10.90 per cent respectively. However, in 2000-2001 over 1995-96, net area sown again increased by 4.46 per cent.

**Table III.2 Period-wise Shift in Area Under Different Land Use Categories in Lucknow District**

Land Use Category	1985-86 over 1980-81	1990-91 over 1985-86	1995-96 over 1990-91	2000-01 over 1995-96
Reporting Area	1365 (0.54)	.....	20 (0.01)	-289 (-0.11)
Forest	1936 (20.44)	.....	.....	9559 (83.79)
Barren Land	-373 (-3.36)	-10 (-0.09)	-514 (-4.80)	-1155 (-11.33)
Land Under Non-agricultural Uses	-17 (-0.07)	.....	2256 (9.54)	-2003 (-7.73)
Culturable Waste	-1483 (-11.17)	-750 (-6.36)	-1449 (-13.12)	-2404 (-25.06)
Permanent Pasture	12 (0.36)	....	-247 (-7.31)	-7 (-0.22)
Miscellaneous trees	-2652 (-32.69)	-10 (-0.18)	-1289 (-23.65)	-3243 (-77.92)
Current Fallow	-9725 (-35.22)	2288 (12.79)	13708 (67.96)	-4341 (-12.81)
Other Fallow	4364 (40.08)	-1726 (-11.32)	4208 (31.11)	-2461 (-15.57)
Net Area Sown	9303 (6.49)	208 (0.14)	-16653 (-10.90)	6066 (4.46)

Note : Figures in bracket indicate the prcentae.

The situation thus indicates that in Lucknow district, area under forest, other fallow and net area sown experienced positive shift in 1985-86 over 1980-81. All other uses of

land showed negative shift. In 1990-91 over 1985-86, area of barren land and current fallow showed positive shift. In case of reporting area, area under forest, land used for non-agricultural uses and permanent pasture, there was no shift at all. The remaining land uses showed negative shift. Reporting area, area under non-agricultural uses, current fallow and other fallow had positive shift in 1995-96 over 1990-91. There was no increase in the area under forest during this period. All the remaining uses of land demonstrated negative shift. In 2000-2001 over 1995-95, only forest area and net area sown had positive shift while remaining uses of land showed negative shift in the district.

### **III.4 GROWTH IN AREA OF DIFFERENT LAND USES**

The growth rates in case of different type of land uses of Lucknow District were worked for the period 1980-81 to 1990-91, 1990-91 to 2000-2001 and taking into account the entire period of 1980-81 to 2000-2001. The results have been shown in Table III.3. It is evident from the table that reporting area in the district had negligible growth during the first and last periods. During 1990-91 to 2000-2001, reporting area in the district had nominal negative growth. The area of forest showed the growth of 2.04 per cent, 8.38 per cent and 6.07 per cent in the first, second and last periods respectively. The area of barren land had negative growth of 0.04 pr cent during 1980-81 to 1990-91, 1.76 per cent during 1990-91 to 2000-2001 and 0.93 per cent during the whole period of 1980-81 to 2000-2001. In Lucknow district, area put to various non-agricultural uses had negative growth of 0.01 per cent during 1980-81 to 1990-91 but during the subsequent periods, the growth had been negligible though positive. The area under culturable waste demonstrated negative growth of 1.93 per cent, 3.29 per cent and 2.29 per cent respectively during the period considered. The area under permanent pastures had negative growth of 0.75 per cent and 0.36 per cent respectively during 1990-91 to 2000-

2001 and 1980-81 to 2000-2001 but there was very little growth of 0.04 per cent in the area of permanent pasture during 1980-81 and 1990-91. The area under miscellaneous trees had experienced highest negative growth in comparison with other uses of land during all the three periods analyzed. The area of current fallow had negative growth during 1980-81 to 1990-91 but during later periods, it had positive growth of 4.36 per cent and 0.35 per cent in 1990-91 to 2000-2001 and 1980-81 and 2000-2001 respectively. The area under other fallow land had positive growth during each of the three periods. The net area sown in the district indicated negative growth of 0.66 per cent and 0.04 per cent during 1990-91 to 2000-2001 and 1980-81 and 2000-2001 respectively. It had positive growth of less than one per cent during 1980-81 and 1990-91. On the whole, among all type of land uses in Lucknow district, area under forest had highest positive growth during the periods considered in the analysis. The area under miscellaneous trees, on the other hand, experienced highest negative growth in the district. The area of fallow land, in general, had positive increase. During the long span of two decades, net sown area in the did not increase rather it was reduced marginally.

Table III.3: Growth Rate in Area Under Different Land Use Categories in Lucknow District

Land Use Category	1980-81 to 1990-91	1990-91 to 2000-01	1980-81 to 2000-01
Reporting Area	0.05	-0.01	0.02
Forest	2.04	8.38	6.07
Barren Land	-0.04	-1.76	-0.93
Land Under Non-Agricultural Uses	-0.01	1.07	0.05
Culturable Waste	-1.93	-3.29	-2.29
Permanent Pasture	0.04	-0.75	-0.36
Miscellaneous trees	-3.28	-8.31	-4.43
Current Fallow	-2.55	4.36	0.35
Other Fallow	2.61	0.91	1.88
Net Area Sown	0.62	-0.66	-0.04

### **III.5 PROJECTION OF LAND USE PATTERN OF THE DISTRICT**

By taking into account the past changes in different type of land uses, a projection was made in Table III.4 to find out that what will be the share of different land uses in reporting area from 2000-2001 to 2009-2010. On the basis of results of projection, it became evident that the proportion of forest area in reporting area would be in between 8 to 9 per cent from 2000-2001 to 2009-2010. The area of barren land would be gradually and very nominally reduced from 3.59 per cent in 2000-2001 to 2009-2010. The area of barren land would be gradually and very nominally reduced from 3.59 per cent in 2000-2001 to subsequent years. There would be no change in the share of land put to non-agricultural uses from 2000-2001 to 2009-2010. It will remain stagnant at 9.49 per cent of the reporting area during the entire period. The area of culturable waste would be reduced in successive years from 2.85 per cent in 2000-2001 to reach to 1.47 per cent during 2009-2010. The projection shows that the area under permanent pasture would be constant at about 1.24 per cent during all the years in between 2000-2001 to 2010. The area of miscellaneous trees which suffered maximum decline in the district would be further minimized from 0.36 per cent of the reporting area in 2000-2001 to 0.12 per cent in 2009-2010. The percentage of area of current fallow and other fallow would remain more or less constant in reporting area during all the years considered in the analysis. The projection further reveals that the percentage of net area sown in total reporting area would not experience any significant change during all the years from 2000-2001 to 2009-2010. It may remain at 56-57 per cent of the reporting area. By and large the projection analysis indicated that the land use pattern in Lucknow district would not have noticeable changes during the coming years from 2000-2001 to 2009-2010.

Table III.4 : Projected Area Under Different Land Use Classes

Land Use Category	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	(Ha.)
Reporting Area	251853 (100.00)										
Forest	20967 (8.33)	21130 (8.39)	21357 (8.48)	21634 (8.59)	21886 (8.69)	22213 (8.82)	22516 (8.94)	22768 (9.04)	22944 (9.11)	23145 (9.19)	
Barren Land	9039 (3.59)	8981 (3.57)	8921 (3.54)	8853 (3.52)	8787 (3.49)	8726 (3.46)	8647 (3.44)	8591 (3.41)	8536 (3.39)	8476 (3.37)	
Land Under Non-Agricultural Uses	23904 (9.49)	23905 (9.49)	23906 (9.49)	23907 (9.49)	23908 (9.49)	23909 (9.49)	23910 (9.49)	23911 (9.49)	23912 (9.49)	23913 (9.49)	
Culturable Waste	7190 (2.85)	6698 (2.66)	6239 (2.48)	5792 (2.30)	5389 (2.14)	4999 (1.99)	4652 (1.85)	4317 (1.72)	4014 (1.60)	3701 (1.47)	
Permanent Pasture	3127 (1.24)	3128 (1.24)	3129 (1.24)	3130 (1.24)	3131 (1.24)	3132 (1.24)	3133 (1.24)	3134 (1.24)	3135 (1.24)	3136 (1.25)	
Miscellaneous trees	919 (0.36)	820 (0.33)	731 (0.29)	652 (0.26)	585 (0.23)	525 (0.21)	472 (0.19)	423 (0.17)	365 (0.15)	311 (0.12)	
Current Fallow	29539 (11.73)	29875 (11.86)	30197 (11.99)	30424 (12.08)	30575 (12.14)	30877 (12.26)	31205 (12.39)	31381 (12.46)	31507 (12.51)	31708 (12.59)	
Other Fallow	14974 (5.95)	14655 (5.82)	14356 (5.70)	14205 (5.64)	14028 (5.58)	13827 (5.49)	13525 (5.37)	13323 (5.29)	13122 (5.21)	12996 (5.16)	
Net Area Sown	142194 (56.46)	142661 (56.64)	143017 (56.79)	143256 (56.88)	143564 (57.00)	143645 (57.04)	143793 (57.09)	144005 (57.18)	144318 (57.30)	144467 (57.36)	

## CHAPTER IV

### IDENTIFICATION OF PLANNING AREAS

The utilization of land for varying purposes hardly follows a standard pattern. It is generally governed by the human needs. It becomes difficult to achieve a balance unless a land use plan is not prepared with proper identification of areas which require attention. In this chapter, each of the nine classifications of land uses has been scrutinized in order to identify those uses of land which need model planning in Lucknow district.

#### **IV.1 LAND UNDER FOREST**

The forest cover in Uttar Pradesh was drastically reduced after carving out of the State of Uttarakhand. Even before formulation of Uttarakhand, land used for forest had been far lower than the standard norm in most of the plain districts of the State. In Lucknow district, land area under forest has been quite lower in comparison with the norm of 30 per cent share of forest area in reporting area as recommended in the National Forest Policy. Keeping in view the progress of the State Forest Department in increasing the forest area in different districts of the State including the Lucknow district, it did not seem possible that forest area would increase to the level of 30 per cent in the reporting area of the district during coming years. However, there is need to divert land from other uses for afforestation to increase the forest cover in the district and it requires a proper planning.

#### **IV.2 BARREN LAND**

The area of barren land constitutes around 4 per cent of the reporting area in the district. Certainly, such a large area of barren land, requires proper plan to utilize it in the near future. According to the officials of Department of Agriculture, around 35 per cent of total barren land in the district is rocky and hence not usable with the given level of technology of barren land reclamation. For the reclamation and use of rest of the area of barren land, Department of Agriculture and World Bank aided Sodic Land Reclamation Project are engaged. Keeping in view their past performance, it is to be decided that how much area of the barren land can be treated for different uses.

#### **IV.3 LAND UNDER NON-AGRICULTURAL USES**

The land used for non-agricultural purposes is increasing due to urbanisation and industrialisation. It is one of the important symbols of development in the present society. In Lucknow district, around 10 per cent of the reporting area is under non-agricultural uses at present and it is likely to increase during coming years. Therefore, demand of land for non-agricultural purposes is to be met from other categories of land. It is evident from the observation that generally agricultural land has been diverted for non-agricultural uses. In this situation, rate of growth in the area of non-agricultural uses is to be planned. It is also to be looked into the possibility of using of non-agricultural areas for other purposes.

#### **IV.4 CULTURABLE WASTE**

The area of culturable waste constitutes around 3 per cent of the reporting area in Lucknow district. In comparison with the State, its share is higher in the district. Keeping in view the constant growth in the demand of land for varying purposes, area of culturable

waste can be utilised for cultivation, for increasing forest cover and for non-agricultural purposes. Therefore, culturable waste land requires proper planning for its possible use during the coming years.

#### **IV.5 PERMANENT PASTURE LAND**

The area of pasture land is around one per cent in the reporting area of Lucknow district. During the last years, there has been some decline in this area. But keeping in view the population of livestock in the district, further reduction in the area of pastures would become undesirable. Therefore, in the proposed Model Land Use Plan of the Lucknow district, area of pasture land would not be touched for any other uses. It will be proposed to remain the same during each year upto 2009-2010 to the level of 2000-2001.

#### **IV.6 AREA UNDER MISCELLANEOUS TREES**

There has been considerable decline in the area under miscellaneous trees during the past years in the district. The continuous reduction in area under miscellaneous trees also acted as pull factor for increasing forest area of the district. Actually the area under miscellaneous trees constituted the area of old orchards, new orchards and scattered trees. On the whole, cutting of trees also has adverse environmental impact. Thus, from both view points, i.e. afforestation and environment, it is proposed that upto 2009-2010, further decline in the area of miscellaneous trees would be checked and it will be maintained at the existing level.

#### **IV.7 FALLOW LAND**

The area of both type of fallow land is very substantial in the district. In particular, area under current fallow has been around 12 per cent of the reporting area in 2000-2001.

The other fallow land also constituted around 6 per cent in reporting area. In the proposed land use plan, a framework for the management of fallow land would be devised so that fallow land could be diverted for cultivation and other uses.

#### **IV.8 NET AREA SOWN**

The net area sown has not risen much over the years in the district despite the fact that demand of land for agriculture has increased with the growth in population. There is need that some area of barren land, culturable waste and fallow land should be diverted to net area sown. It is, therefore, needed that to the level of 2000-2001 a plan be proposed to increase the net area sown during coming ten years in the district.

On the basis of above, following seven (7) categories of land uses in the district require planning for their proper utilization upto 2009-2010:

- (i) Planning for Forest Area.
- (ii) Planning for Barren Land.
- (iii) Planning for Non-Agricultural Uses.
- (iv) Planning for Culturable Waste.
- (v) Planning for Current Fallow.
- (vi) Planning for Other Fallow.
- (vii) Planning for Net Area Sown.

## CHAPTER – V

### LAND USE PLANNING IN LUCKNOW DISTRICT

In the preceding chapter, trends in land use pattern of Lucknow district from 1980-81 to 2000-2001 were examined. The analysis revealed that the utilization of land for various purposes has become haphazard and unplanned. For instance, percentage of area under forest to total reporting area of the district was found to be far lower than the prescribed norm. The net area sown could not increase with the passage of time while the proportion of area used for non-agricultural purposes reached to around ten per cent of the reporting area. In this situation, it was needed that a proper land use plan in case of each of the nine-uses of land should be prepared, taking into account the past trend as well as the progress and plan of the concerned departments responsible for the management of different uses of land. The plan, thus, prepared would not be the utopian one. It would conform to the realities and could be implemented in the future. Accordingly in this chapter, a model land use plan of each of the nine-fold uses of land of Lucknow district has been prepared.

#### V.1 PLAN FOR FOREST DEVELOPMENT

The forest cover in Lucknow district had been 4 per cent to 5 per cent of the reporting area during 1980-1981 to 1995-96. It increased to 8 per cent of the reporting area upto 2000-2001. However, such increase fell short of the recommended level of 30 per cent of the forest area in reporting area as laid down in the National Forest Policy. Given the present position of forest cover in the district and the achievements of the State

Forest Department to increase forest cover in the district, it is impractical to plan for increasing the forest cover in Lucknow district to the level of 30 per cent during the coming ten years or so. But certainly there is need of a plan to increase the forest cover in the district. One important point is to be mentioned here that the Forest Department has defined the meaning of forest by not only increasing the area of reserve forest but the forest area would mean increasing the tree cover. Therefore, when it is mentioned to plan for increasing the area of forest in Lucknow district, it implies that tree cover would be increased.

## **V.2 STRATEGY OF INCREASING TREE COVER**

The fact is that in Lucknow district there is need to increase tree cover but such increase can not be achieved unless a proper plan is drawn up which suggests that how much area of a particular land use could be diverted for afforestation during the successive years on the basis of past growth in forest area and the discussion with the officials of the Department of Forest, Government of Uttar Pradesh. On this basis, following methodology has been framed for planning to increase tree cover in Lucknow district.

### **V.2.1 METHODOLOGY**

The net area shown is the most suitable for afforestation. But large scale plantation on the sown area would not be practically feasible. Therefore, it is to be decided that during each year, how much portion of the net sown area could be utilized for afforestation. Moreover, there are marginal, small, medium and large farmers. A fixed percentage of net area sown can not be set in case of each of these farmers for increasing tree coverage because the preference of different farmers for plantation may vary across their land size groups. Though, it is rationale to fix a percentage of the net sown area on

which new plantation is to be carried each year at the aggregate level on the basis of discussion with the forest department officials. But in respect of owners of different land sizes, different percentages have been fixed. As shown in Table V.1, 0.50 per cent of the net area sown of Lucknow district during each year from 2000-2001 to 2009-2010 is planned for the use of plantation. But different percentage of area of different farmers, ranging from 0.11 per cent in case of land holdings of less than one ha., 0.54 per cent from 1-2 ha. of holdings, 0.81 per cent from 2-4 ha. of land size group, 1.08 per cent from 4-10 ha. of land size group and 1.35 per cent from 10 ha. and above land holdings would be brought under tree cover.

**Table V.1 : Plan to Increase Tree Cover on Net Sown Area in Lucknow District**

Land Size Group	Percentage of Area Proposed for Tree Cover
Less than One Ha.	0.11
1 – 2 Ha.	0.54
2 – 4 Ha.	0.81
4 – 10 Ha.	1.08
10 Ha. and above	1.35
Total	0.50

The land classified as barren could also be used for increasing the tree cover in the district. The officials of the Directorate of Agriculture, Uttar Pradesh, during the course of discussion, reported that around 35 per cent of the barren land in the district is rocky and ravines and, thus, worthless to be utilized for plantation or cultivation. Therefore, 35 per cent of the barren land has been excluded from the existing area of barren land. It has been decided to utilize 2 per cent of the 65 per cent of the barren land each year from 2001-2002 to 2009-2010 for increasing tree cover.

Land under non-agricultural uses has been increasing in the district because of growth in urbanization and industrialization. In Lucknow district, around ten per cent of the reporting area has been put to various non-agricultural uses by 2000-2001. As per the estimate of the Department of Forest, it would be practically possible to utilize 0.50 per cent of the total area used for non-agricultural purposes under tree cover each year in Lucknow district.

Culturable waste is such type of land that, despite being, worth of cultivation is not utilized for cultivation at present. The Department of Forest has planned to use 6.50 per cent of the total culturable waste for plantation in the state. However, keeping in view the past performance of the Forest Department in this regard, it is proposed to use 1.50 per cent of the culturable waste for increasing tree cover in Lucknow district upto 2009-2010.

The area under pasture land is lowest among all uses of land. Its area has been found to be declining. Keeping in view the livestock population in the district, it would not be rationale to bring any part of pasture land for plantation.

A declining trend was evident in case of area under the miscellaneous trees. The old miscellaneous trees are being cut and new orchards/trees are coming up. It is expected that due to better return from horticulture during the years to come, more and more farmers could be attracted for horticulture. Therefore, land area used for horticulture which is shown as area under miscellaneous trees would add to forest cover but would be treated as separate land use category.

The fallow land is comprised of two types. One is the current fallow which is left uncultivated during the current agricultural season. The other is the old fallow which has remained uncultivated for 3-4 years. In the Lucknow district, area under other fallow has

been higher than the area under the current fallow. It has been decided to bring 1.50 per cent area of both fallows under the tree cover in which 0.50 per cent area of current fallow and 1.00 per cent area of other fallow would be put under plantation to increase tree cover during the each year upto 2009-2010 in the district.

On the basis of above plan, total area proposed for tree cover in Lucknow district would be as shown in Table V.2.

**Table V.2: Area of Different Land Uses Which is to be used for Tree Cover in Lucknow District Upto 2009-2010**

Year	Net Sown Area	Barren Land	Land under Non-Agricultural Uses	Culturable Waste	Current Fallow	Other Fallow	Existing Forest Area	Total Area Proposed for Tree Cover (2 to 8)	Percentage of Reporting Area
1	2	3	4	5	6	7	8	9	10
2000-01	--	--	--	--	--	--	20967	--	8.33
2001-02	711	118	120	108	148	150	20967	22322	8.86
2002-03	721	113	124	96	137	139	22322	23652	9.39
2003-04	730	108	128	85	128	128	23652	24959	9.91
2004-05	737	104	132	75	119	118	24959	26244	10.42
2005-06	743	100	137	67	110	109	26244	27510	10.93
2006-07	747	96	142	59	103	101	27510	28758	11.42
2007-08	751	92	147	52	95	93	28758	29988	11.91
2008-09	753	89	152	46	88	85	29988	31201	12.39
2009-10	754	85	157	41	82	78	31201	32398	12.86

It is evident from the table that the tree cover in Lucknow district would increase by around 6 per cent from the preceding year starting from 2001-2002. Increase in the area of forest cover during the successive years would be slower as compared to the growth in the initial year. The reason would be that lesser and lesser land would be available in the

district to increase tree cover with the passage of time. In this way, percentage of area under forest in reporting of the Lucknow district which was 8.33 per cent during 2000-2001, would be increased to 12.86 per cent upto 2009-2010. Thus, the planned increase in tree cover of Lucknow district during 2009-2010 would be 56 per cent higher from the area of tree cover of 2000-2001.

The proposed plan of increasing tree coverage in the Lucknow district should be achieved mainly through people's participation. The Department of Forest should provide expertise to grow seedlings. As per the estimate of the Forest Department, 1100 seedlings per hectare would be required. The estimated cost per seedling comes to Rs.5/- per seedling. On this basis, estimated financial requirement would be to the tune of around Rs.74.52 lakhs during the initial year. The cost will decrease in successive years as proposed area for tree coverage would decline. On this estimate, year-wise cost of the proposed plan of increase in tree lower in Lucknow district has been presented in Table V.3.

Table V.3 : Estimated Financial Requirement for the Proposed Area in Tree Cover of Lucknow District from 2001-02 to 2009-2010

Year	Total Area (Ha.)	Total Seedling Required (No.)	Rate of Seedlings (Rs.)	Total Cost (Rs.)
2001-02	1355	1490500	5.00	7452500
2002-03	1330	1463000	5.00	7315000
2003-04	1307	1437700	5.00	7188500
2004-05	1285	1413500	5.00	7067500
2005-06	1266	1392600	5.00	6963000
2006-07	1248	1372800	5.00	6864000
2007-08	1230	1353000	5.00	6765000
2008-09	1213	1334300	5.00	6671500
2009-10	1197	1316700	5.00	6583500

### V.3 PLAN OF BARREN LAND USE

In the nine-fold classification of land use, as published officially, area of barren land comprised of two types. One is the barren land which is rocky and ravineous and cannot be utilized either for cultivation or growing any sort of vegetation. The other part of the barren land is the usar and degraded land. This part of the barren land can be reclaimed and put to use. The officials of the Department of Agriculture were in view that roughly 35 per cent of the total barren land in the State is unfit for any use and remaining 65 per cent can be treated for the varying uses. On the basis of discussion with the officials of the Agriculture Department, following plan of barren land use in Lucknow district has been drawn.

As explained in the last section that 2 per cent of the 65 per cent of the reclaimable part of the barren land was earmarked for afforestation to increase tree cover in the district from 2001-2002 to 2009-2010. Thus, from the reclaimable area of barren land of each year, 2 per cent would be subtracted to arrive at the net area of reclaimable barren land. The area of barren land, thus, arrived at can not be treated at one time. The Department of Agriculture and Bhumi Sudhar Nigam have been engaged in the reclamation of barren land. The efforts put in by both the Departments in this direction have resulted in the reduction of barren land by nearly 1.16 per cent per year during the period 1995-96 to 2000-2001. However, the officials of these departments were in view that during the years to come, roughly 2 per cent of the reclaimable barren land would be treated. On this basis, it has been assumed here that the reclaimable area of barren land in Lucknow district would decline by 2 per cent per year during the period of 2001-2002 to 2009-2010. On an average, 100 hectares plus would be the reduction in the area of barren land per year, during the period 2000-2001 to 2009-2010 in Lucknow district. In Table V.4, plan

of barren land use for the period 2001-2002 to 2009-2010 of Lucknow district has been presented.

Table V.4 : Proposed Plan of Barren Land Use in Lucknow District

Year	Barren Land	Rocky and Ravenous (35% of Barren Land)		Reclaimable Barren Land	Barren Land Diverted for Tree Cover	Barren Land Available for Reclamation	Proposed for Reclamation	Remaining Barren Land	Net Barren Land Available (3+8)	Percentage of Barren Land in Reporting Area
		1	2							
2000-01	9039									3.59
2001-02		3164	5875	118	5757	115	5642	8806	3.50	
2002-03		3164	5642	113	5529	111	5418	8582	3.41	
2003-04		3164	5418	108	5310	106	5204	8368	3.32	
2004-05		3164	5204	104	5100	102	4998	8162	3.24	
2005-06		3164	4998	100	4898	98	4800	7964	3.16	
2006-07		3164	4800	96	4704	94	4610	7774	3.09	
2007-08		3164	4610	92	4518	90	4428	7592	3.01	
2008-09		3164	4428	89	4339	87	4252	7416	2.94	
2009-10		3164	4252	85	4167	83	4084	7248	2.88	

#### V.4 PLAN OF LAND AREA UNDER NON-AGRICULTURAL USES

Land area used for various non-agricultural purposes constituted around 10 per cent of the reporting area by 2000-2001 in the district. If the growth in the area under non-agricultural uses is examined, it showed a negative growth of around 8 per cent during 1995-96 to 2000-2001. During the period of 1990-91 to 1995-96, area under non-agricultural uses increased by around 9 per cent. Thus, on the basis of land use data published by the Directorate of Agriculture, it can be inferred that the area under non-agricultural uses does not indicate any definite trend, rather its share in reporting area of the district hovered around 10 per cent since long period of time. According to the Master

Plan of Lucknow, 2001, prepared by the Town and Country Planning, Department of Uttar Pradesh, land used for non-agricultural purposes in urban areas of the Lucknow district experienced a growth of 61.13 per cent during 1987-2002. On this basis, land put to non-agricultural uses in urban areas of the district had an annual growth of 4.07 per cent per annum during the last 15 years. It is the fact that constituents of the land used for various non-agricultural purposes in rural and urban areas are the housing, commercial, offices, industries, recreation/park/play-ground facilities, utility and services, transport, river and open spaces. Taking into account the growth of population in the district and past growth in the area used for various non-agricultural purposes in urban areas of the district, it has been assumed here that land area put to various non-agricultural uses would have a positive annual growth of 4 per cent each year upto 2009-2010. It is to be now considered that which of the uses of land would be diverted to meet the 4 per cent growth in area of non-agricultural uses each year upto 2009-2010. It has been assumed here that current fallow, other fallow and net area sown are the three components of land, from which land would be diverted to meet the growth of 4 per cent in the area used for non-agricultural purposes. The areas of current fallow, other fallow and net area sown are proposed to be diverted to non-agricultural uses as per their proportionate shares in the land use pattern of the district.

On the above basis, area put to use of various non-agricultural purposes which was 23904 hectares in 2000-2001 would increase to 32521 hectares during 2009-2010, indicating a growth of 36.05 per cent during this period. Its share in the reporting area would also increase from 9.49 per cent in 2000-2001 to 12.92 per cent during 2009-2010. The year-wise increase in the area under non-agricultural uses of Lucknow district from 2000-2001 to 2009-2010 has been presented in Table V.5.

Table V.5: Proposed Plan of Increase in the Area of Non-Agricultural Uses in Lucknow District

Year	Area Under Non-Agricultural Uses	Area of Non-Agricultural Uses Diverted for Tree Cover	Net Area Under Non-Agricultural Uses (2-3)	Net Area Sown to be Used for Non-Agricultural Uses	Area of Current Fallow to be used for Non-Agricultural Uses	Area of Other Fallow to be used for Non-Agricultural Uses	Total Area to be used for Non-Agricultural Uses (4 to 7)	% of Reporting Area
1	2	3	4	5	6	7	8	9
2000-01	23904	--	--	--	--	--	--	9.49
2001-02	23904	120	23784	725	150	76	24735	9.82
2002-03	24735	124	24611	749	156	79	25595	10.16
2003-04	25595	128	25467	726	161	82	26486	10.52
2004-05	26486	132	26354	803	167	84	27408	10.88
2005-06	27408	137	27271	831	173	87	28362	11.26
2006-07	28362	142	28220	860	179	90	29349	11.65
2007-08	29349	147	29202	890	185	93	30370	12.06
2008-09	30370	152	30218	921	191	97	31427	12.48
2009-10	31427	157	31270	953	198	100	32521	12.92

## V.5 PLAN FOR CULTURABLE WASTE

There was substantial area of culturable waste in Lucknow district. It was more than 7000 hectares during 2000-2001. Even now, more than 6000 hectares of culturable waste land is lying unutilized in the district. Keeping in view the large population of landless and near landless people in the district, it would be rationale to use culturable waste land mainly for cultivation. While planning to increase tree cover in the district, it was proposed to do afforestation on 1.50 per cent of the area of culturable waste during each year from 2000-2001. But the main question remained that how much area of culturable waste can be used for agriculture. The officials of the Department of Agriculture, Government of Uttar Pradesh, expressed their concern that due to one reason or others, rise in net area sown could not be compatible with the increase in population in the district of Lucknow.

**Table V.5: Proposed Plan of Increase in the Area of Non-Agricultural Uses in Lucknow District**

Year	Area Under Non-Agricultural Uses	Area of Non-Agricultural Uses Diverted for Tree Cover	Net Area Under Non-Agricultural Uses (2-3)	Net Area Sown to be Used for Non-Agricultural Uses	Area of Current Fallow to be used for Non-Agricultural Uses	Area of Other Fallow to be used for Non-Agricultural Uses	Total Area to be used for Non-Agricultural Uses (4 to 7)	% of Reporting Area
1	2	3	4	5	6	7	8	9
2000-01	23904	--	--	--	--	--	--	9.49
2001-02	23904	120	23784	725	150	76	24735	9.82
2002-03	24735	124	24611	749	156	79	25595	10.16
2003-04	25595	128	25467	726	161	82	26486	10.52
2004-05	26486	132	26354	803	167	84	27408	10.88
2005-06	27408	137	27271	831	173	87	28362	11.26
2006-07	28362	142	28220	860	179	90	29349	11.65
2007-08	29349	147	29202	890	185	93	30370	12.06
2008-09	30370	152	30218	921	191	97	31427	12.48
2009-10	31427	157	31270	953	198	100	32521	12.92

## **V.5 PLAN FOR CULTURABLE WASTE**

There was substantial area of cultural waste in Lucknow district. It was more than 7000 hectares during 2000-2001. Even now, more than 6000 hectares of culturable waste land is lying unutilized in the district. Keeping in view the large population of landless and near landless people in the district, it would be rationale to use culturable waste land mainly for cultivation. While planning to increase tree cover in the district, it was proposed to do afforestation on 1.50 per cent of the area of culturable waste during each year from 2000-2001. But the main question remained that how much area of culturable waste can be used for agriculture. The officials of the Department of Agriculture, Government of Uttar Pradesh, expressed their concern that due to one reason or others, rise in net area sown could not be compatible with the increase in population in the district of Lucknow

and the state of Uttar Pradesh. They cited the non-use of the large area of culturable waste in the district over the years, as one of reasons for not increasing the net area sown. As far the decline in the area of culturable waste during past five years, preceding 2000-2001 is concerned, it has been by 5.89 per cent per annum. It was discussed with the officials of Department of Agriculture that looking into the trend of utilization of culturable waste in the past, how much area of the culturable waste should be diverted to the net area sown during each year upto 2009-2010. It was agreed upon that efforts should be made to divert around 10 per cent area of culturable waste during each year upto 2009-2010, keeping in view the size of the area of culturable waste in the district. On this basis, area of culturable waste would be reduced by 62 per cent during 2009-2010 than what was in 2000-2001. There would be a successive decline in the share of the area of culturable waste in reporting area of the district during each year from 2000-2001 to 2009-2010. The percentage of the area of culturable waste which was 2.85 in 2000-2001, would be reduced to 0.97 per cent by 2009-2010. In Table V.6, a plan of utilization of culturable waste land in Lucknow district has been presented.

**Table V.6: Proposed Plan for the Use of Culturable Waste in Lucknow District**

Year	Culturable Waste	Area of Culturable Waste Diverted to Tree Cover	Area of Culturable Waste Diverted to Net Area Sown	Remaining Culturable Waste (2-3-4)	% of Reporting Area
1	2	3	4	5	6
2000-01	7190				2.85
2001-02	7190	108	708	6374	2.53
2002-03	6374	96	628	5650	2.25
2003-04	5650	85	557	5008	1.99
2004-05	5008	75	493	4440	1.77
2005-06	4440	67	437	3936	1.56
2006-07	3936	59	388	3489	1.39
2007-08	3489	52	344	3093	1.23
2008-09	3093	46	305	2742	1.09
2009-10	2742	41	270	2431	0.97

## **V.6 PLAN FOR THE PASTURE LAND**

The area under permanent pasture has been 3000 plus hectares in the district from 1980-81 to 2000-2001. But there has been nominal decline in this area over the years. Its share in the reporting area remained 1.34 per cent upto 1990-91 and thereafter it declined to 1.24 per cent in 1995-96 and 2000-2001. The decline in area of permanent pasture has been mainly due to encroachment for cultivation, despite the fact that there is Government Orders that area of pastures can not be diverted for other uses including for agricultural purposes. It is also the fact that whatever area is under pasture in the district, that is insufficient to feed the growing population of livestocks as several of the farmers have started growing various types of fodder crops on their cultivated area. It gives credence to our belief that existing area under pasture is insufficient to feed the population of livestock and any decline in this area during coming years would pose a serious problem for feeding the livestocks of the district. Therefore, in the proposed land use plan of Lucknow district, any diversion of the area under the pastures is to be restricted and upto 2009-2010, there should not be any decline in the area of 3127 hectares of pasture land. It is to be ensured by the revenue officials and village panchayats.

## **V.7 PLAN FOR THE MISCELLANEOUS TREES**

The area of miscellaneous trees indicates the area of old trees/orchards as well as new trees/orchards. The area of this land use category has experienced a sharp decline over the years. In 1980-81, area under miscellaneous trees was 8113 hectares which was reduced to only 919 hectares during 2000-2001. Even during last five years since 2000-2001, area under miscellaneous trees suffered a decline by around 78 per cent. Given the small size of land area under miscellaneous trees and the importance of trees for healthy

environment, meeting the needs of woods and horticulture, there seems to be no logic that whatever area has been left under the category of miscellaneous trees should be touched for other uses. Therefore, the act and government orders which prohibit the cutting of trees, are to be implemented seriously during the coming years and atleast the existing area of 919 hectares under the miscellaneous trees is to be kept untouched.

#### **V.8 PLAN FOR CURRENT FALLOW**

In Lucknow district, quite a plenty of land has remained under the current fallow. During 2000-2001, around 30,000 hectares of land was under the current fallow. This trend has persisted since long as the share of the area under current fallow to the reporting area of the district during 2000-2001 was found to be 12 per cent which was highest among all other uses of land in the district. Therefore, it is needed that such a large area which has been the part of the net sown area, should not be left unutilized. In the past, there has been reduction in the area of fallow land by around 3 per cent in the district. Keeping in view the size of the area of current fallow and views of the officials of Department of Agriculture, it has been thought appropriate to utilize around 6 per cent of the area of both fallow land (current and old fallows) for cultivation. The share of each of the two fallow land proposed for utilization would be divided on the basis of proportionate share of each of the fallow land in total fallow land in the district. On this basis, around half of the area of current fallow of 30,000 hectares of 2000-2001 would be reduced by 2009-2010. The share of current fallow which was 11.73 per cent in 2000-2001 in reporting area of the district would be gradually diverted to the cultivated area over the years and it will come down to 6 per cent by 2009-2010. Besides, it has already been planned to use 0.50 per cent of area of the current fallow for increasing tree cover and for

non-agricultural uses in its proportionate share in Lucknow district during each year upto 2009-2010. The detailed plan of proposed utilization of current fallow of Lucknow district has been presented in Table V.7.

**Table V.7: Proposed Plan for the Use of Current Fallow in Lucknow District**

Year	Current Fallow	Area of Current Fallow Diverted for Tree Cover	Area of Current Fallow Diverted for Non-Agricultural Uses	Area of Current Fallow Diverted for Net Area Sown	Remaining Current Fallow Land {(2-3-4)-5}	% of Reporting Area
1	2	3	4	5	6	7
2000-01	29539	--	--	--	--	11.73
2001-02	29539	148	150	1752	27489	10.92
2002-03	27489	137	156	1626	25570	10.15
2003-04	25570	128	161	1508	23773	9.44
2004-05	23773	119	167	1399	22088	8.77
2005-06	22088	110	173	1295	20510	8.15
2006-07	20510	103	179	1199	19029	7.56
2007-08	19029	95	185	1109	17640	7.00
2008-09	17640	88	191	1024	16337	6.49
2009-10	16337	82	198	944	15113	6.00

## **V.9 PLAN FOR OTHER FALLOW**

The area of other fallow land which denotes the land that has not been cultivated for more than three-four years, has also been large in Lucknow district. In 2000-2001, land area under other fallow was around 15000 hectares in the district. Its percentage in reporting area of the district was around 6 per cent in 2000-2001. The available data suggested that the area of other fallow land did not demonstrate continuous decline over the years. At one point of time, there was decline in this area from previous year but at later years its area showed increasing trend. Since the area of other fallow land has been

the part of the cultivated area, it has been decided to bring some of its area under cultivation during each year upto 2009-2010. As mentioned that six percent of area of both fallow land would be diverted to the cultivation during each year upto 2009-2010. The contribution of each of the two fallow land in this six percentage would be as per their proportionate shares in total fallow land of the district. In this way, as shown in Table V.8, around 6000 hectares of other fallow land would be diverted for use of cultivation by 2009-2010. Despite it, the area of fallow land would remain around 7000 hectares in the district in 2009-2010. The percentage of other fallow land which was 5.95 in 2000-2001 would be reduced to 2.85 per cent in 2009-2010. Besides, diversion to the cultivated area, 1 per cent of its area has also been proposed for afforestation. 8.02 per cent has also been earmarked for non-agricultural uses.

**Table V.8: Proposed Plan for the Use of Other Fallow in Lucknow District**

Year	Other Fallow	Area of Other Fallow Diverted for Tree Cover	Area of Other Fallow Diverted for Non-Agricultural Uses	Area of Other Fallow Diverted for Net Area Sown	Remaining Other Fallow Land ((2-3-4)-5}	% of Reporting Area
1	2	3	4	5	6	7
2000-01	14974	--	--	--	--	5.95
2001-02	14974	150	76	888	13860	5.50
2002-03	13860	139	79	824	12818	5.09
2003-04	12818	128	82	765	11843	4.70
2004-05	11843	118	84	709	10932	4.34
2005-06	10932	109	87	657	10079	4.00
2006-07	10079	101	90	608	9280	3.68
2007-08	9280	93	93	562	8532	3.39
2008-09	8532	85	97	519	7831	3.11
2009-10	7831	78	100	479	7174	2.85

## V.10 PLAN FOR NET AREA SOWN

A model of net area sown emerges from the proposed plan of other uses of land upto 2009-2010. As mentioned earlier that 0.50 per cent of the net sown area was proposed to be used for increasing tree cover in the district and 76.16 per cent of the 4 per cent of its area was planned to be diverted for non-agricultural uses. Further, it was decided to reclaim 2 per cent of the barren land to be added in the net area sown. It was planned to bring 10 per cent of the culturable waste land under cultivation each year and 6 per cent area of both the fallows, according to their proportionate shares, was planned to be used for cultivation. The resultant net area sown showed its share of 59.92 per cent in reporting area of the district in 2009-2010 from 56.46 per cent in 2000-2001. The net area sown of the district would increase by 8728 hectares in 2009-2010 from 2000-2001. In Table V.9, proposed plan of net area sown for the period 2000-2001 to 2009-2010 has been presented.

Table V.9 : Proposed Plan for the Net Area Sown in Lucknow District

Year	Net Area Sown	Net Area Sown Diverted for Tree Cover	Net Area Sown Diverted for Non-Agricultural Uses	Barren Land	Current Fallow	Other Fallow	Culturable Waste	Total Net Area Sown (2-3-4+5+6+7+8)	Percentage of Reporting Area
				Added to Net Area Sown					
1	2	3	4	5	6	7	8	9	10
2000-01	142194	--	--	--	--	--	--	--	56.46
2001-02	142194	711	725	115	1752	888	708	144221	57.27
2002-03	144221	721	749	111	1626	824	628	145940	57.95
2003-04	145940	730	776	106	1508	765	557	147370	58.52
2004-05	147370	737	803	102	1399	709	493	148533	58.98
2005-06	148533	743	831	98	1295	657	437	149446	59.34
2006-07	149446	747	860	94	1199	608	388	150128	59.61
2007-08	150128	751	890	90	1109	562	344	150592	59.80
2008-09	150592	753	921	87	1024	519	305	150853	59.90
2009-10	150853	754	953	83	944	479	270	150922	59.92

## CHAPTER – VI

### **MODEL LAND USE PLAN OF LUCKNOW DISTRICT**

In the last chapter, a plan has been prepared for the utilization of land for varying purposes in Lucknow District from 2000-2001 to 2009-2010. The plan has been prepared on three pragmatic considerations. First is the past changes in land use pattern in each of the nine classifications of land use. Second is the progress and plan of the concerned departments for the management of different uses of land and consideration of financial implications involved. Third is the assessment of the situation that to what extent the past trends and achievements of the concerned departments would be agglomerated to arrive at the situation which shall be closer to the reality. In fact, we did our best of endeavours to prepare the proposed plan of different uses of land more realistic so that it could be implemented by the concerned departments.

#### **VI.1 FRAMEWORK OF THE PLAN**

The following framework was developed to prepare the Model Land Use Plan of the Lucknow District:

Table VI.1: Framework of Model Land Use Plan

Sl.No.	Land Use Category	Constituents of Proposed Land Use Plan of each category (2000-2001 to 2009-2010)
1.	Reporting Area	Constant
2.	Forest	Existing area + 0.50 per cent area of Net Area Sown + 2 per cent area of barren land + 0.50 per cent area of Non-Agricultural Uses + 1.50 per cent area of culturable waste + 0.50 per cent area of current fallow and 1 per cent area of other fallow.
3.	Barren Land	Existing area – 35 per cent rocky and ravines – 2 per cent went to Forest – 2 per cent went to Net Area Sown.
4.	Land Under Non-Agricultural Uses	Existing area – 0.50 per cent went to Forest + 4 per cent area of current, other and net area sown (Share of 4 per cent in each category, 15.82, 8.02 and 76.16 per cent).
5.	Culturable Waste	Existing area – 1.50 per cent area went to Forest – 10 per cent area diverted went to Net Area Sown
6.	Permanent Pasture	Constant
7.	Miscellaneous Trees	Constant
8.	Current Fallow	Existing area – 0.50 percent went to Forest – 15.82 per cent of share of 4 per cent went to non-agricultural uses – 6 per cent to be diverted to Net Area Sown as per Share of the Current Fallow in Total Fallow
9.	Other Fallow	Existing area – 1.0 per cent area went to Forest – 8.02 percent share of 4 per cent went to non-agricultural uses – 6 per cent to be diverted to Net Area Sown as per Share of the Other Fallow in Total Fallow
10.	Net Area Sown	Existing area – 0.50 per cent went to Forest – 76.16 per cent of share of 4 per cent went to non-agricultural uses + 2 per cent from Barren Land + 10 per cent from Culturable Waste + 6 per cent of both fallows.

On the basis of above framework, area under forest which is to be referred as area under tree cover, which was 8.33 per cent in reporting are during 2000-2001 in the district, shows continuous increasing trend and it reaches to 12.86 per cent of the reporting area by 2009-2010. Though by 2009-2010, area under tree cover would be lower than the recommended norm of 30 per cent as envisaged in the National Forest Policy. But further increase beyond 13 per cent of tree cover would not be possible to achieve in the district, taking into consideration all the factors involved.

The plan reveals continuous decline in the area of barren land from 2000-2001 to 2009-2010. Its percentage in reporting area of the district was 3.59 and it will come down to 2.88 per cent.

As the urbanization and industrialization are increasing, proposed area under non-agricultural uses would also increase in the district from 9.49 per cent in 2000-2001 to 12.92 per cent during 2009-2010.

The percentage of area of culturable waste was 2.85 per cent in reporting area of the district in 2000-2001. It has been planned that would be largely converted to the cultivation and its share would be reduced to 0.97 per cent upto 2009-2010.

No change in the area of permanent pasture and miscellaneous trees has been proposed and it has been recommended that concerned departments should strive to maintain the status-quo of the existing area of both these uses of land.

The area under current fallow was substantial in the district. Its share in the reporting area was 11.73 per cent in 2000-2001. It has been planned to reduce the area of current fallow by 6 per cent in 2009-2010. The reduced area would be largely diverted to the net area sown in respective years. The similar plan was proposed in case of other fallow.

The proposed plan of utilization of eight categories of uses of land has bearing on the net area sown. The percentage of net area sown in the reporting area of Lucknow district was 56.46 per cent in 2000-2001. Due to shifting of area within eight uses of land, net area sown would increase in successive years after 2000-2001 and its share in reporting area would increase to 59.92 per cent in 2009-2010. In the following Table VI.2,

complete proposed Model Land Use Plan of Lucknow District for the period 2001-2002 to 2009-2010 has been shown.

**Table VI.2: Model Land Use Plan of Lucknow District: 2000-2001 to 2009-2010**

Land Use Category	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Reporting Area	251853 (100.00)									
Forest	20967 (8.33)	22322 (8.86)	23652 (9.39)	24959 (9.91)	26244 (10.42)	27510 (10.93)	28758 (11.42)	29988 (11.91)	31201 (12.39)	32398 (12.86)
Barren Land	9039 (3.59)	8806 (3.50)	8582 (3.41)	8368 (3.32)	8162 (3.24)	7964 (3.16)	7774 (3.09)	7592 (3.01)	7416 (2.94)	7248 (2.88)
Land Under Non-Agricultural Uses	23904 (9.49)	24735 (9.82)	25595 (10.16)	26486 (10.52)	27408 (10.88)	28362 (11.26)	29349 (11.65)	30370 (12.06)	31427 (12.48)	32521 (12.92)
Culturable Waste	7190 (2.85)	6374 (2.53)	5650 (2.25)	5008 (1.99)	4440 (1.77)	3936 (1.56)	3489 (1.39)	3093 (1.23)	2742 (1.09)	2431 (0.97)
Permanent Pasture	3127 (1.24)									
Miscellaneous trees	919 (0.36)									
Current Fallow	29539 (11.73)	27489 (10.92)	25570 (10.15)	23773 (9.44)	22088 (8.77)	20510 (8.15)	19029 (7.56)	17640 (7.00)	16337 (6.49)	15113 (6.00)
Other Fallow	14974 (5.95)	13860 (5.50)	12818 (5.09)	11843 (4.70)	10932 (4.34)	10079 (4.00)	9280 (3.68)	8532 (3.39)	7831 (3.11)	7174 (2.85)
Net Area Sown	142194 (56.46)	144221 (57.27)	145940 (57.95)	147370 (58.52)	148533 (58.98)	149446 (59.34)	150128 (59.61)	150592 (59.80)	150853 (59.90)	150922 (59.92)

## Annexure: Land Use Pattern In Lucknow District

(Hect.)

Year	Reporting Area	Land Use Categories									Net Area Sown
		Forest	Barren Land	Land Under Non-Agricultural Uses	Culturable Waste	Permanent Pasture	Miscellaneous Trees	Current Fallow	Other Fallow		
1970-71	256017 (100.00)	11545 (4.51)	17478 (6.82)	23006 (8.99)	18801 (7.34)	4261 (1.66)	11845 (4.63)	8773 (3.43)	7833 (3.06)	152475 (59.56)	
1972-73	255760 (100.00)	11558 (4.52)	17026 (6.66)	23130 (9.04)	18591 (7.27)	4311 (1.69)	11893 (4.65)	9034 (3.53)	7762 (3.03)	152455 (59.61)	
1974-75	250993 (100.00)	6991 (2.79)	16748 (6.67)	23214 (9.25)	19156 (7.64)	4398 (1.75)	11583 (4.62)	11425 (4.55)	10474 (4.17)	146944 (58.56)	
1975-76	250993 (100.00)	6991 (2.78)	16748 (6.67)	23178 (9.24)	19219 (7.66)	4398 (1.75)	11458 (4.57)	11261 (4.49)	10534 (4.20)	147146 (58.64)	
1976-77	250734 (100.00)	6991 (2.79)	15944 (6.36)	23119 (9.22)	17610 (7.02)	4369 (1.74)	9516 (3.80)	15023 (5.99)	10678 (4.26)	147484 (58.82)	
1977-78	253169 (100.00)	9472 (3.74)	15851 (6.26)	23046 (9.10)	17435 (6.89)	4155 (1.64)	9005 (3.56)	16000 (6.32)	11337 (4.48)	146868 (58.01)	
1978-79	253169 (100.00)	9472 (3.74)	10755 (4.25)	23051 (9.10)	14760 (5.83)	4221 (1.67)	9417 (3.72)	12731 (5.03)	7981 (3.15)	160775 (63.51)	
1979-80	250757 (100.00)	9472 (3.78)	13883 (5.54)	23073 (9.20)	11982 (4.78)	4221 (1.68)	4748 (1.89)	27104 (10.81)	5808 (2.32)	150466 (60.00)	
1980-81	250757 (100.00)	9472 (3.78)	11091 (4.42)	23668 (9.44)	13276 (5.29)	3369 (1.34)	8113 (3.24)	27609 (11.01)	10889 (4.34)	143270 (57.14)	
1981-82	250295 (100.00)	9472 (3.78)	11076 (4.43)	23610 (9.43)	12838 (5.13)	3275 (1.31)	6855 (2.74)	19248 (7.69)	11817 (4.72)	152104 (60.77)	
1982-83	252195 (100.00)	11408 (4.53)	10718 (4.25)	23585 (9.35)	12713 (5.04)	3291 (1.31)	7072 (2.80)	21092 (8.36)	13096 (5.19)	149220 (59.17)	
1983-84	252902 (100.00)	11408 (4.51)	10718 (4.24)	23651 (9.35)	12593 (4.98)	3301 (1.31)	6329 (2.50)	22677 (8.97)	11413 (4.51)	150812 (59.63)	
1984-85	252581 (100.00)	11408 (4.52)	10718 (4.25)	23651 (9.36)	11518 (4.56)	3421 (1.35)	5666 (2.24)	21610 (8.56)	13925 (5.51)	150664 (59.65)	
1985-86	252122 (100.00)	11408 (4.52)	10718 (4.25)	23651 (9.36)	11793 (4.68)	3381 (1.34)	5461 (2.17)	17884 (7.09)	15253 (6.05)	152573 (60.52)	
1986-87	252122 (100.00)	11408 (4.52)	10718 (4.25)	23651 (9.38)	11056 (4.39)	3381 (1.34)	5450 (2.16)	23698 (9.40)	13584 (5.39)	149176 (59.17)	
1987-88	252122 (100.00)	11408 (4.52)	10718 (4.25)	23651 (9.38)	11056 (4.39)	3381 (1.34)	5450 (2.16)	27214 (10.79)	14789 (5.87)	144455 (57.30)	

## Annexure (contd.....)

Year	Land Use Categories									
	Reporting Area	Forest	Barren Land	Land Under Non-Agricultural Uses	Culturable Waste	Permanent Pasture	Miscellaneous Trees	Current Fallow	Other Fallow	Net Area Sown
1988-89	252122 (100.00)	11408 (4.52)	10718 (4.25)	23651 (9.38)	11053 (4.39)	3381 (1.34)	5450 (2.16)	25987 (10.31)	13930 (5.53)	146544 (58.12)
1989-90	252122 (100.00)	11408 (4.52)	10718 (4.25)	23651 (9.38)	11053 (4.39)	3381 (1.34)	5451 (2.16)	26103 (10.35)	13466 (5.35)	146891 (58.26)
1990-91	252122 (100.00)	11408 (4.52)	11043 (4.38)	23651 (9.39)	10708 (4.25)	3381 (1.34)	5451 (2.16)	20572 (8.16)	13727 (5.44)	152181 (60.36)
1991-92	252162 (100.00)	11408 (4.53)	11372 (4.51)	24382 (9.67)	10285 (4.08)	3411 (1.35)	5011 (1.99)	26408 (10.47)	13952 (5.53)	145933 (57.87)
1992-93	251926 (100.00)	11408 (4.53)	10250 (4.07)	24043 (9.54)	10276 (4.08)	3121 (1.24)	5011 (1.99)	27819 (11.04)	18084 (7.18)	141914 (56.33)
1993-94	251926 (100.00)	11408 (4.53)	10250 (4.07)	24043 (9.54)	10379 (4.12)	3121 (1.24)	4954 (1.96)	29244 (11.61)	17737 (7.04)	140790 (55.89)
1994-95	252266 (100.00)	11408 (4.52)	10109 (4.01)	24849 (9.85)	10272 (4.07)	3101 (1.23)	4318 (1.71)	30316 (12.02)	17394 (6.90)	140499 (55.69)
1995-96	252142 (100.00)	11408 (4.53)	9594 (3.80)	25907 (10.27)	10194 (4.04)	3134 (1.24)	4162 (1.66)	33880 (13.44)	17735 (7.03)	13612 (53.99)
1996-97	251855 (100.00)	11408 (4.53)	9303 (3.69)	23911 (9.49)	10109 (4.02)	3119 (1.24)	3086 (1.23)	33106 (13.14)	17330 (6.88)	140483 (55.78)
1997-98	251853 (100.00)	11408 (4.53)	9285 (3.69)	23899 (9.49)	10064 (4.00)	3127 (1.24)	3090 (1.22)	31259 (12.41)	17846 (7.09)	141875 (56.33)
1998-99	251853 (100.00)	11408 (4.53)	9241 (3.67)	23901 (9.49)	10044 (3.99)	3127 (1.24)	3016 (1.20)	32581 (12.94)	17159 (6.81)	141376 (56.13)
1999-2000	251853 (100.00)	11408 (4.53)	9226 (3.66)	23901 (9.49)	10039 (3.99)	3127 (1.24)	2921 (1.16)	31882 (12.66)	17102 (6.79)	142247 (56.48)
2000-01	251853 (100.00)	20967 (8.33)	9039 (3.59)	23904 (9.49)	7190 (2.85)	3127 (1.24)	919 (0.36)	29539 (11.73)	14974 (5.95)	142194 (56.46)